

S6365-AA-PRO-010

0910-LP-150-6900

S6365-AA-PRO-01B

**PROCEDURE
FOR
REPAIR AND PAINTING
OF
RADAR CAMOUFLAGE UNIT COMPONENTS
AND
INSTALLING RAM ON CLOSURE CAPS
(NON-KIT AREAS)**



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PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

15 MAY 1991
CHANGE B 30 AUG 1994
0910-LP-150-6902

LIST OF EFFECTIVE PAGES

Dates of Original and Change Pages are:

Original May 1991

Change B 30 Aug 1994

Change A Mar 1993

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Total number of pages in this manual is 66 consisting of the following:

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Title and A	B	SECTION 2	
B/(C blank)	B	2-1	B
Change Guide	B	2-2 and 2-3	0
Certification Sheet	B	2-4 and 2-5	B
Change Guide	A	2-6 through 2-11	0
Certification Sheet	A	2-12	B
#Certification Sheet	0	2-13 through 2-15	0
Change Record	0	2-16 Blank	0
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Foreword-1	B	SECTION 3	
Foreword-2 Blank	0	3-1 through 3-7	0
i through vi	0	3-8 and 3-9	B
		3-10 through 3-14	0
SECTION 1		3-15 and 3-16	B
1-1 and 1-2	B	3-17	A
1-3	A	3-18 Blank	0
1-4	B		
1-5 through 1-7	0		
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Change B

A

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Page No.		* Change No.	Page No.		* Change No.
	APPENDIX A			APPENDIX B	
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Change B

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TM Change Number: S6365-AA-PRO-01B

Stock Number: 0910-LP-150-6902

Change: B

Title: PROCEDURE FOR REPAIR AND PAINTING OF RADAR CAMOUFLAGE UNIT
COMPONENTS AND INSTALLING RAM ON CLOSURE CAPS (NON-KIT AREAS)

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1-1 through 1-4
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2-11 and 2-12
3-7 through 3-10
3-15 and 3-16
.....

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Foreword-1/(Foreword-2 Blank)
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0910LP1506902



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Certification Applies to: Change B

Applicable TMINs/Change No.: S6365-AA-PRO-01B

Publication Date: 30 AUGUST 1994

Title: PROCEDURE FOR REPAIR AND PAINTING OF RADAR CAMOUFLAGE UNIT
COMPONENTS AND INSTALLING RAM ON CLOSURE CAPS (NON-KIT AREAS)

TMCR: NDMS 940150-000

PURPOSE OF CHANGE: Add references to CIIIc RAM and MX-11489/BPQ RCU


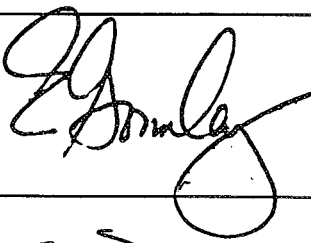

Equipment Alteration Numbers Incorporated: N/A

TMDER/ACN Numbers Incorporated: N/A

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APPROVAL SIGNATURES

Authority	Name	Signature	Organization	Date
Acquisition	R. Waldner, Shipbuilding Support Section		CDNSWC 1433	2 Sep 1994
Technical	E. Gormley, Head, Shipbuilding Support Section		CDNSWC 1433	12 Sep 94
Printing Release	J.C. Duggan, Engineering Quality Assurance		CDNSWC 1433	15 Sep 94

FOREWORD

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TABLE OF CONTENTS

PARAGRAPH	PAGE
SECTION I - GENERAL INFORMATION	
1-1 INTRODUCTION	
a. Purpose	1-1
b. Scope	1-1
c. Applicability	1-1
d. Special Instructions	1-1
1-2 REFERENCES	1-2
1-3 TOOLS AND EQUIPMENT REQUIRED TO PERFORM REPAIR WORK	1-3
1-4 MANPOWER AND SERVICES	1-5
a. Manpower Requirements	1-5
b. Services Required	1-5
1-5 SECURITY REQUIREMENTS	1-6
a. Security Classification	1-6
b. Storage and Handling Requirements	1-6
1-6 SAFETY PRECAUTIONS	1-6
a. Fire Precautions	1-6
b. Personnel Safety Precautions	1-6
c. Handling Precautions for the Adhesive	1-6
SECTION II - REPAIR OF RADAR CAMOUFLAGE UNITS (RCU)	
2-1 PROCEDURES	
a. Inspection	2-1
b. Removal	2-1
c. Repair	2-1
d. Edge Sealing (Laminating)	2-1
e. Bubble and Delamination of RAM from Substrate Repairs	2-8
f. Painting	2-10
g. Notification of Repair	2-11
h. AN/BRD-7 Inspection Criteria/Repair Guidance	2-13
i. Disposal	2-14
	2-15
SECTION III - APPLICATION OF RAM TO CLOSURE CAPS	
3-1 PROCEDURES	
a. Manpower Requirement	3-1
b. Services Required	3-1
c. Clearance and Preparation of the Closure Cap	3-1
d. Safety Precautions	3-5
e. Cutting and Fitting the Screen for a Typical Bonding Application	3-5
f. Preparation of and Bonding of the RAM	3-8
g. Seam Filling	3-10
h. Edge Seal (Laminating)	3-11
i. Bubble Repair	3-15
j. Bonding RAM to Dark-Eyes	3-15
k. Painting	3-17

TABLE OF CONTENTS (Continued)

APPENDIX A MATERIAL SAFETY DATA SHEET

APPENDIX B RADAR CAMOUFLAGE UNIT INSTALLATION NOTICE

LIST OF FIGURES		PAGE
Figure 2-1	RCU Inspection	2-2
Figure 2-2	Removal of Damaged RAM by Cutting	2-3
Figure 2-3	Cutting of Delaminated RAM Edge	2-3
Figure 2-4	Use of Dynaflex for RAM Removal	2-4
Figure 2-5(a)	Cutting of Replacement RAM	2-4
Figure 2-5(b)	Physical Characteristics of RAM	2-5
Figure 2-6	Adhesive Application	2-6
Figure 2-7	Use of Tape in Repair of RAM	2-6
Figure 2-8	Filling Seams	2-7
Figure 2-9	Lamination of Repaired Edge	2-9
Figure 2-10	Edge Lamination Completed	2-9
Figure 2-11	Providing Vent Hole	2-10
Figure 2-12	Adhesive Injection	2-11
Figure 2-13	Psychrometric Chart	2-13
Figure 3-1	AN/BRD-7 Closure Cap Machining and RAM Application	3-2
Figure 3-2	Typical Closure Cap Machining and RAM Application	3-3
Figure 3-3	"Non-Kit Area" RAM Application	3-4
Figure 3-4	Cutting of Screen	3-5
Figure 3-5	Applying Screen to Closure Cap	3-7
Figure 3-6(a)	Cutting of RAM	3-9
Figure 3-6(b)	Cutting of RAM	3-9
Figure 3-7	Typical Seam Filling and Edge Lamination	3-11
Figure 3-8	Typical Closure Cap RAM Application	3-13
Figure 3-9	Typical Closure Cap RAM Application	3-14
Figure 3-10	Typical Closure Cap RAM Application	3-15

SAFETY SUMMARY

GENERAL SAFETY NOTICES

The following general safety notices supplement the specific warnings and cautions appearing elsewhere in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered herein. Should situations arise that are not covered in the general or specific safety precautions, the commanding officer or other authority will issue orders as deemed necessary to cover the situation. No work shall be undertaken on energized equipment or circuits until approval of the commanding officer is obtained.

DO NOT REPAIR OR ADJUST ALONE.

Under no circumstances shall repair or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering aid is required. Before making adjustments, be sure to protect against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment. Even when power has been removed from equipment circuits, dangerous potentials may still exist. For further information, refer to NAVSEA S9086-KC-STM-000, chapter 300.

TEST EQUIPMENT.

Make certain test equipment is in good condition. If a metal-cased test meter must be held, ground the case of the meter before starting measurement. Do not touch live equipment or personnel working on live equipment while holding a test meter. Some types of measuring devices should not be grounded; these devices should not be held when taking measurements.

FIRST AID.

An injury, no matter how slight, shall never go unattended. Always obtain first aid or medical attention immediately, and file an injury report in accordance with OPNAVINST 5102.1A dated 30 Apr 1982, subject: Mishap Investigation and Reporting.

RESUSCITATION.

Personnel working with or near high voltage shall be familiar with approved methods of resuscitation. Should someone be injured and stop breathing, begin resuscitation immediately. A delay could cost the victim's life. Resuscitation procedures shall be posted in all electrically hazardous areas.

GENERAL PRECAUTIONS

The following general precautions are to be observed at all times.

1. Install and ground all electrical components associated with this system/equipment in accordance with applicable Navy regulations and approved shipboard practices.
2. Ensure that all maintenance operations comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series.
3. Observe precautions set forth in Naval Ships' Technical Manual (NSTM) chapters 300, 302, 310, and 320, with respect to electrical equipment and circuits.
4. Ensure that protective guards and shutdown devices are properly installed and maintained around rotating parts of machinery and high-voltage sources.
5. Do not wear loose clothing or jewelry while working around rotating parts of machinery.
6. Ensure that special precautionary measures are employed to prevent applying power to the system/equipment, and tags are installed in accordance with ship's tag-out procedure any time maintenance work is in progress.
7. Do not make any unauthorized alterations to equipment or components.
8. Before working on electrical system/equipment, check with voltmeter to ensure that system is not energized.
9. Consider all circuits, not known to be "dead," "live" and dangerous at all times.

10. When working near electricity, do not use metal rules, flashlights, metallic pencils, or any other objects having exposed conducting material.
11. Deenergize all equipment before connecting or disconnecting meters or test leads.
12. When connecting a meter to terminals for measurement, use range higher than the expected voltage.
13. Before operating equipment or performing any tests or measurements, ensure that frames of all motors and starter panels are securely grounded.
14. Ensure that area is well-ventilated when using cleaning compound or approved solvent. Avoid prolonged breathing of fumes and compound or solvent contact with skin or eyes.

WARNINGS AND CAUTIONS

Specific warnings and cautions applying to the system/equipment covered by this manual are summarized below. These warnings and cautions appear elsewhere in the manual following paragraph headings and immediately preceding the text to which they apply. They are repeated here for emphasis.

WARNINGS

Observe all SAFETY PRECAUTIONS while GRINDING, CUTTING, or FITTING the RAM MATERIAL. Use SAFETY GLASSES and RUBBER GLOVES. (Page 2-1)

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES. (Pages 2-5, 3-6, 3-10, 3-11, 3-12, 3-15 and 3-16)

If METHYLE ETHYLE KETONE is used as the SOLVENT in Para. 2-1d.(5), the SAFETY PRECAUTIONS specified in Para. 1-6a., 6b., and 6c. must be followed. Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES. (Page 2-8)

SAFETY PRECAUTIONS as specified in Paras. 1-6a., 1-6b., and 1-6c. must be adhered to. Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCE. (Page 2-11)

CAUTIONS

Avoid seams and/or joints on forward leading edge of the closure cap. (Page 3-8)

Only a minimum amount of material should be removed during this operation. (Page 3-10)

Do not use any material that will scratch or damage the crystal. (Page 3-15)

Do not use lead or a metallic base paint for lettering. (Page 3-17)

SECTION I - GENERAL INFORMATION

1-1 INTRODUCTION

- a. Purpose. This procedure provides instructions for the repair and painting of damaged Radar Camouflage Units (RCU). These units are also called Radar Cross Section Reduction kits (RCSR). It also provides for installing Radar Absorption Material (RAM) on closure caps and other designated non-kit areas at the Intermediate Maintenance Activity (IMA).
- b. Scope. Section II provides the procedure to repair and paint RCU components at the IMA level. Section III provides the procedure to install and paint RAM on closure caps and other designated non-kit areas at the IMA level.
- c. Applicability. This procedure is applicable to all RCU components, closure caps and non-kit areas employing CIIIIa, CIIIIb, and CIIIIc RAM. CIIIIa is used in the Pacific area, CIIIIb is used in the Atlantic area, and CIIIIc is a Tripleband RAM which may be used in both areas.
- d. Special Instructions.
 - (1) Intermediate Maintenance Activity (IMA). IMA's will repair RCU components in accordance with this document when the damaged area on the RCU of the RAM is not greater than one-quarter of the surface area of the substrate. If there is any doubt, confer with CDNSWC Sail ISE Representative.

NOTE

Prior to commencing repairs, the repair activity shall ascertain the RAM to be utilized for repair is identical to that being repaired.

- (2) No more than one major repair to any single RCU component will be performed by the IMA. RCU components which have had a major repair previously performed will be shipped to the Depot Maintenance Activity.
- (3) Remove damaged RCU components in accordance with References (a) through (f) as applicable. Carderock Division, Naval Surface Warfare Center, Sail ISE Representatives will provide technical assistance as required.
- (4) Depot Maintenance Level, which is located at Philadelphia Naval Base, Philadelphia, PA has provided IMA repair sites with repair kits and the initial issue of on-board spares. It is the responsibility of the IMA to provide the necessary adhesives, paint, fiberglass, etc. The IMA will ship unrepairable RCU to CDNSWC, Philadelphia, Code 9613 adhering to the proper security procedures of Reference (m). The kits are classified as confidential and should be shipped as such. RAM damage greater than described in paragraph 1-1d.(1) will be repaired at the depot level.

- (5) Fasteners. All used fasteners (except barrel nuts, trunnions, and banding buckles) should be closely examined for damage, etc. If in good condition, they should be saved for reuse. Refer to the assembly construction drawing for replacement description.

1-2 REFERENCES

- a. NAVSEA 0900-LP-016-8090, Procedure for Installation and Removal of MX-8913/BPQ, MX-9868/BPQ, MX-9895/BPQ and MX-9896/BPQ Radar Camouflage Units on the Type 15 Periscope Systems.
- b. NAVSEA 0900-LP-016-9010, Procedure for Installation and Removal of MX-9876/BPQ, MX-9877/BPQ, MX-9900/BPQ and MX-9901/BPQ Radar Camouflage Units on the Type 8B Periscope Systems.
- c. NAVSEA 0900-LP-016-9030, Procedure for Installation and Removal of MX-9870/BPQ, MX-9897/BPQ and MX-11498/BPQ Radar Camouflage Units on the Type AN/BLA-4 Antenna Systems.
- d. NAVSEA 0900-LP-016-9040, Procedure for Installation and Removal of MX-8969/BPQ and MX-9898/BPQ on the AS-1653/WLR and AS-3327/BLR ESM Antenna Systems.
- e. NAVSEA 0900-LP-016-9050, Procedure for Installation and Removal of MX-9997/BPQ, MX-9998/BPQ and MX-11489/BPQ Radar Camouflage Units on the Type 18 Periscope.
- f. NAVSEA SE110-AF-PRO-010, Procedure for Installation and Removal of MX-9991/BPQ and MX-9992/BPQ Radar Camouflage Units on the AN/BRD-7 Antenna.
- g. NAVSEA Dwg. SS-472-4491221, Radar Camouflage Units for AN/BLA-4 Antenna.
- h. NAVSEA Dwg. SS-472-4491222, Radar Camouflage Units for AS-1653A/WLR or AS-3327/BLR Antenna Array.
- i. NAVSEA Dwg. SS-472-2477292, Periscope Radar Camouflage Units.
- j. NAVSEA Dwg. SS-472-4491223, Radar Camouflage Units for Type 18 Periscope MX-9997/BPQ, MX-9998/BPQ and MX-11489/BPQ.
- k. NAVSEA Dwg. SS-472-4491239, ESM/DF Antenna Fairing Cap, Assembly and Details.
- l. NAVSEA Dwg. SS-472-5361546, Radar Camouflage Units for MX-9871/BPQ, MX-9899/BPQ AN/BRD-6 and MX-9991, MX-9992 AN/BRD-7 Antennas.
- m. OPNAVINST 5510.1H Information Security Program Regulation.
- n. NAVSEA SE110-BK-MMO-010, Procedure for Painting Radomes and Camouflage Painting Submarine Faired Masts.
- o. NAVSEA Dwg. SS-128-4398597, Closure Caps.
- p. NAVSEA Dwg. SSN-637-404-4428331, AN/BLA-4 Fairing Cap.

q. NAVSEA Dwg. SSBN-640-111-2118550, ESM Closure Cap.

r. DELETED

s. NAVSEA Dwg. SSN-637-472-5361546, AN/BRD-7 Closure Cap.

1-3 TOOLS AND EQUIPMENT REQUIRED TO PERFORM REPAIR WORK

ITEM	DESCRIPTION	NSN
a	Template square piece of metal as required	
b	Machinist's scale	9Q 5210-0-362-5100
c	X-acto knife kit	9Q 5110-00-293-1585
d	Dynaflex, Model SSL	Dynaflex, Inc. Tonawanda, NY
e	60 gr sandpaper discs or paper	9Q 5350-00-253-4393
f	Isopropyl alcohol (in plastic bottles) pint size	9L 6506-00-205-6513
g	Kimwipes	9Q 7920-00-543-6492
h	Gloves, rubber, chemical	FSS-65-111A
i	Acid brush	9Q 7920-00-514-2417
j	Scotch-Weld Structural Adhesive (Resin 3M 2216 A/B Gray)	9Q 8040-00-145-0530
k	Accelerator #5 Lord Hughson Chemicals	
l	Versilok 506, Lord Hughson Chemicals	Chemicals Products Group Lord Corporation 2000 West Grandview Blvd. P.O. Box 10038 Erie, PA 16514-0038, or R. D. Abbot Co., Inc. P.O. Box 4275 Long Beach, CA 90804, or Read Plastics, Inc. 1006 Ballentine Blvd. Norfolk, VA 23504, or equivalent
m	Versilok 551, Lord Hughson Chemicals	
n	Chemlok 7701 Rubber Primer, Lord Hughson Chemicals	
o	Chemglaze 9924 Wash Primer, Lord Hughson Chemicals	
p	Chemglaze A-170 Flattening Agent, Lord Hughson Chemicals	

1-3 TOOLS AND EQUIPMENT REQUIRED TO PERFORM REPAIR WORK (CONT'D)

ITEM	DESCRIPTION	NSN
q	Chemglaze II A-471, light gray, Lord Hughson Chemicals	
r	Chemglaze II A-382, black, Lord Hughson Chemicals	
s	Catalyst 9986, Lord Hughson Chemicals	
t	Methyle Ethyle Ketone, FED SPEC TT-M-261 (or Methylene Chloride)	9Q 6810-00-281-2762
u	Ecco Bond Solder 57C Conductive Cement	Emerson & Cummins Cantor, MA 02021
v	Nylon tape	9Q 7510-00-582-4771
w	Masking tape	9Q 7510-00-266-6711
x	50 cc syringe	9L 6515-00-168-6913
y	Tongue depressors	9L 6515-00-324-5500
z	Aluminum mixing dish, 1 oz	Local hardware outlet
aa	112 fiberglass cloth	Burlington Industries Rockleigh, NJ 07647 or equivalent
ab	8 oz paper mixing cups	9Q 7350-00-641-4520
ac	1" paint brush (bristle)	9Q 8020-00-721-9646
ad	Knife, scraping (putty)	9Q 5110-00-223-8827
ae	Breathing filter masks, painter	9Q 4240-00-856-9077
af	CIIIIa RAM, CIIIIb RAM, CIIIIc RAM	GFM NAVSSES Philadelphia, PA
ag	Safety glasses	9Q 4240-00-052-3776
ah	Screen, CRES 304, 14 Mesh, .013 wire diameter, 36" width x 100 foot length roll	Cleveland Wire Cloth 3573 E. 78th Street Cleveland, OH 44105 or equivalent
ai	Multimeter, Simpson 260, SCAT 4245 or equivalent	2F 6625-00-643-1681

1-3 TOOLS AND EQUIPMENT REQUIRED TO PERFORM REPAIR WORK (CONT'D)

ITEM	DESCRIPTION	NSN
aj*	Heat gun, clamp type (for polyethylene)	Packaging Aids Corp. 469 Bryant Street P.O. Box 77203 San Francisco, CA 94107 or Clamco Corp. 11350 Brookpark Road Cleveland, OH 44280 or equivalent
ak*	Film, construction, polyethylene .006" x 3' x 100' FED SPEC L-P-378A	Read Plastics, Inc. 12331 Wilkins Avenue Rockville, MD 20852 or 1006 Ballentine Blvd. Norfolk, VA 23504 or equivalent
al*	Compound, electrical sealing and insulation Type HF SPEC MIL-I-3064A	9Q 5970-00-295-7658
am	Pump, vacuum (WELCH Duo-Seal)	Sargent-Welch Scientific Co. 7300 N. Linder Avenue Skokie, IL 60076 or equivalent
an#	Cloth, canvas No. 6 duck	9Q 8305-00-170-5385
ao#	Sand, standard masonry, or size 60 grit (foundry type) or equivalent	Local distributors
* Required for fabrication and use of vacuum bag. # Required for fabrication of weighted (shot) bag.		

1-4 MANPOWER AND SERVICES

- a. Manpower Requirements. Estimated manpower requirements include:
- (1) Repair of damaged component will require 2 man-days (one man working 2 days).
 - (2) Installing RAM on a closure cap will require 6 man-days (two men working 3 days).
- b. Services Required. Services required in support of RCU repair and painting are as follows:
- (1) Rigging - including crane service as necessary.
 - (2) Periscope Operation - provided by ship's personnel.

(3) Staging - as required.

(4) Canvas shop to fabricate sand (shot) bags. Size and quantity as required.

1-5 SECURITY REQUIREMENTS

- a. Security Classification. The security classification of the RAM is CONFIDENTIAL.
- b. Storage and Handling Requirements. RAM-covered components must be stored and handled in accordance with Reference (m).

1-6 SAFETY PRECAUTIONS

- a. Fire Precautions. The thinning, washing, and adhesive agents utilized in this procedure are fire hazardous. Keep these materials away from heat, sparks, and open flames. Smoking WILL NOT be allowed while handling these materials.
- b. Personnel Safety Precautions. Avoid contact of the thinning, washing, and adhesive agents with skin, eyes, and internal parts of the body. Scotch-Weld 3M 2216 A/B, a 3M product, and Versilok 506 and 551, with accelerator #5, Chemlok 7701, Chemglaze A-170, Chemglaze II A-471 and A-382, Wash Primer 9924, and Catalyst 9986 (products of Lord Hughson Chemicals Corporation) contain chemical agents that could be fatal if swallowed and cause permanent damage to eyes if exposed and not immediately treated. If swallowed, DO NOT INDUCE VOMITING. Drink several glasses of water and CALL a physician IMMEDIATELY. In case of contact with the eyes, flush with fresh water for at least 15 minutes and call a physician. In case of contact with clothing, change immediately and launder clothing before reuse. The area in which work is performed shall be well ventilated to remove harmful vapors. Solvent-resistant rubber gloves, aprons, and goggles shall be worn while working with these materials. Waste material should be discarded in covered waste cans. During grinding/sanding operations, adequate dust mask and eye protection shall be worn.
- c. Handling Precautions for the Adhesive.
 - (1) Bonding agents: Scotch-Weld a 3M product, and Versilok 506 and 551, with accelerator #5 manufactured by Lord Hughson Chemicals Corp., contain chemical agents that may be fatal if swallowed. Scotch-Weld Part A contains AMINE and could cause permanent eye damage if allowed to come into contact with the eyes. Part B contains EPOXY RESIN. Both parts may be irritating to the skin. Versilok adhesives contain ACRYLIC MONOMERS, which may cause skin irritation and prolonged breathing of vapors may cause respiratory irritation. All work associated with these agents should be done in well ventilated areas or with fume hood or chemical canister face mask.
 - (2) Both Scotch-Weld and Versilok 506 and 551 should be stored in original containers in space away from heat, sparks, or open flame; shelf life is approximately 6 months. Store at temperatures of 60°F (not greater than 80°F) for maximum life. Rotate stock on a first in-first out basis.

- (3) Chemlok 7701 will become unstable when exposed to sunlight. Avoid continuous contact with metals. The solvent is believed to be the most hazardous ingredient. Prolonged exposure can cause irritation to eyes, mucous surfaces and respiratory passages. Every caution to avoid sparks and flame should be followed. Chemlok 7701 must be used in a well ventilated area. If exposed to skin, wash quickly and thoroughly with soap and water. Store in cool (70°F or less) dark area away from oil, grease, sawdust, floor sweepings, easily oxidized organic compounds, ammonia, amines, and ammonia salts. In the event of a spill, large quantities of water should be employed.
- (4) Pot life for Scotch-Weld, when mixed, is approximately 90 minutes at 75°F. The adhesive consists of 2 parts: Accelerator part A and base part B. Proper mixture should be 2 parts of B to 3 parts of A and when thoroughly mixed should be a uniform gray in color. Bonded surfaces should be allowed to cure overnight (approximately 16 hours) at temperatures above 60°F. Curing at these temperatures and for this period of time will afford a minimum of 200 psi tensile shear strength at 75°F.
- (5) Pot life for Versilok, when mixed, is approximately 5 minutes for 506 and approximately 3 minutes for 551 at 75°F. For maximum bond strength, it is necessary that the elapsed time from mixing of adhesive with accelerators and applying pressure on the assembled materials be held to the absolute minimum. "Dry runs" are recommended. "Time is of essence," i.e., all materials will be gathered prior to the start of any bonding, seam filling, or laminating process.
- (6) Chemglaze 9924, Wash Primer, Chemlok 7701 Rubber Primer, Chemglaze II A-471 and A-382 and A-170 Flattening Agent should be stored at room temperature. The containers shall be clearly marked and tightly secured. The shelf life of these materials is one year in an unopened container. Keep away from heat, sparks, and open flames. Adhere to the following additional precautions when spraying and/or painting:
- (a) Ensure the working area is well ventilated.
 - (b) Use chemical canister face masks. Do not breathe spray mists or vapors.
 - (c) Avoid prolonged contact with skin; wear rubber gloves.

SECTION II - REPAIR OF RADAR CAMOUFLAGE UNITS (RCU)

2-1 PROCEDURES

- a. Inspection. Inspect the RCU to determine the extent of RAM damage.
- (1) If the total damaged RAM is greater than one-quarter of the surface area of the substrate, do not attempt repair. (Figure 2-1). Remove the RCU in accordance with References (a) through (f) as applicable and ship to repair depot in accordance with Reference (f).
 - (2) If the damaged area of the RAM is within or less than the limits stated in Para. 2-1a.(1), proceed to Para. 2-1b.
 - (3) If only the painted surface is damaged, sand and repaint the refinished area in accordance with Para. 2-1f.
 - (4) Nicks in RAM can be filled with Versilok 506 resin mixed with accelerator #5.
 - (5) Prior to repair and/or replacement of RAM, ascertain the type of RAM to be used for repair has the same physical characteristics as the RAM being repaired, e.g., CIIIIa for repair of CIIIIa RAM.
- b. Removal. If the damaged component must be removed, refer to Section IV of References (a) through (f) as applicable.
- c. Repair.

NOTE

Outside repair requiring adhesive should not be attempted under the following conditions:

- o While it is raining.
- o Early in the morning or late in the evening when dew can condense on the structure.
- o When the ambient temperature is below 60°F.

WARNING

Observe all SAFETY PRECAUTIONS while GRINDING, CUTTING, or FITTING the RAM MATERIAL. Use SAFETY GLASSES and RUBBER GLOVES.

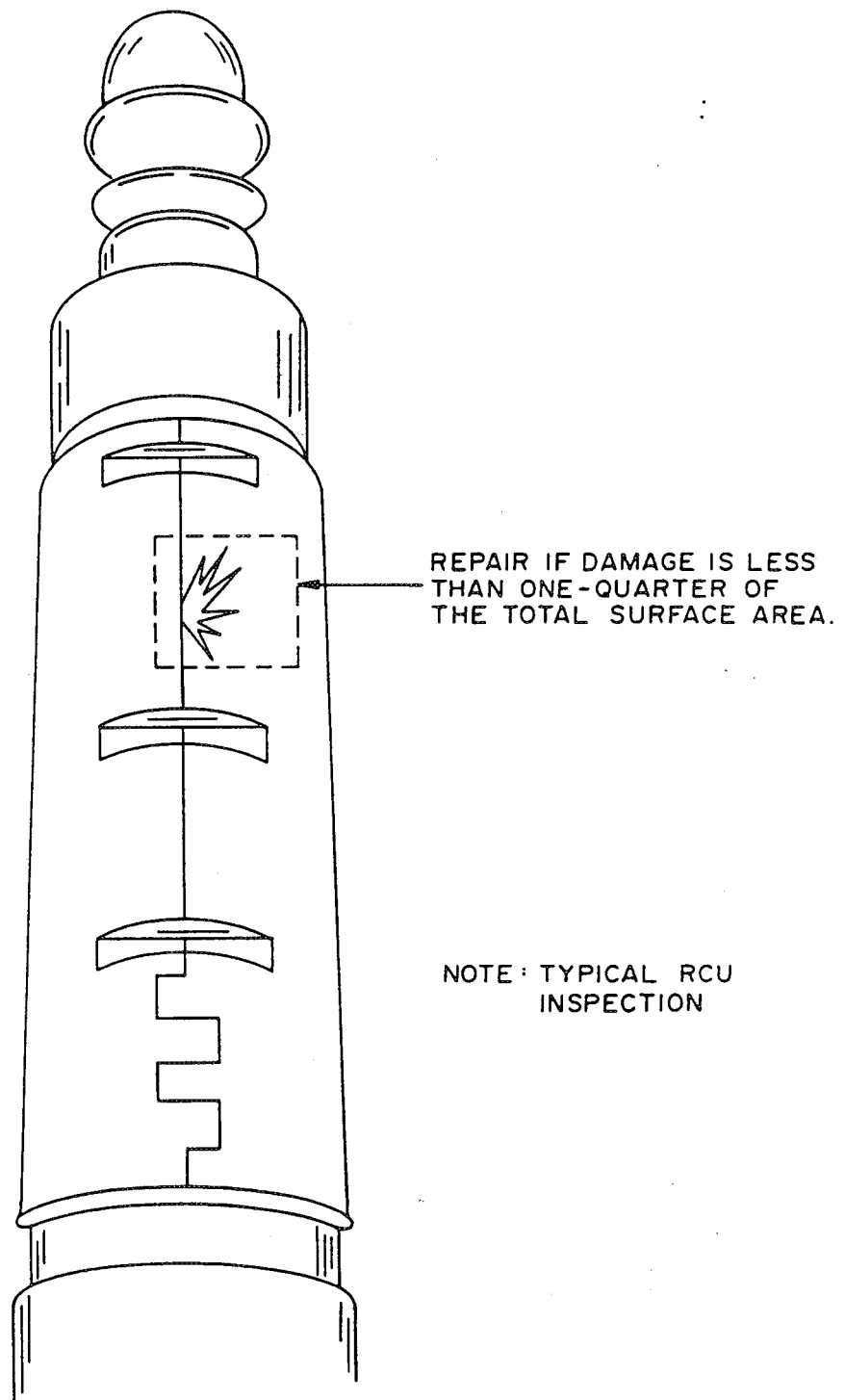


Figure 2-1. RCU Inspection.

(1) Cutting the RAM

- (a) Place the template over the damaged area and cut the RAM using X-acto knife as shown in Figure 2-2.

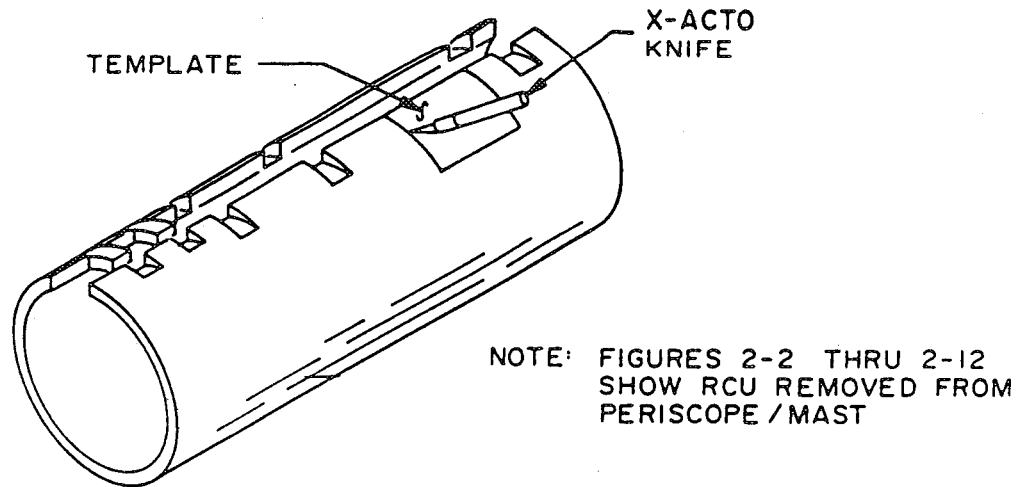


Figure 2-2. Removal of Damaged RAM by Cutting.

- (b) If RAM has delaminated at any exposed edge of component, cut RAM, using X-acto knife and a machinist's scale, beyond the area of delamination, as shown in Figure 2-3. See Para. 2-1a.(1) (page 2-1) for maximum size that can be repaired.

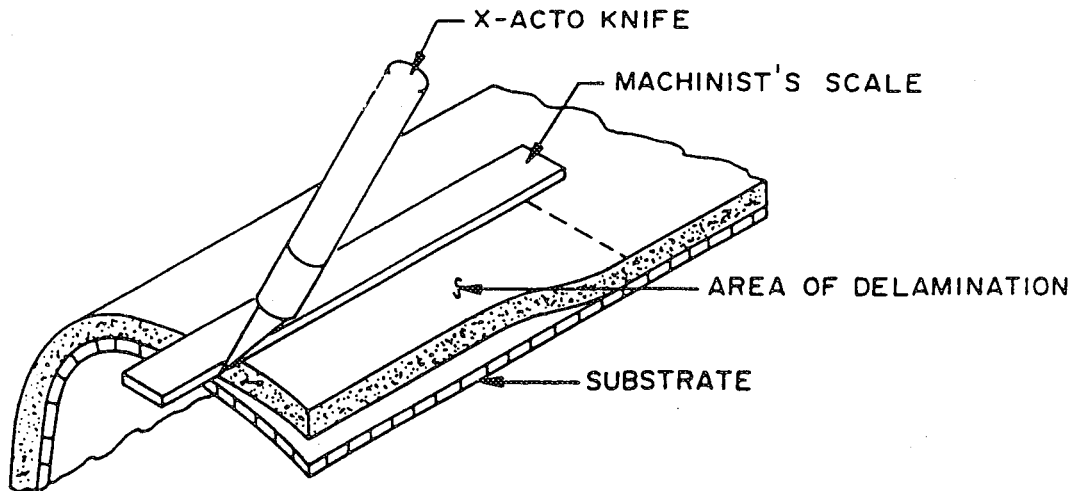


Figure 2-3. Cutting of Delaminated RAM Edge.

- (c) Using a Dynafile, remove all RAM up to the cut. (See Figure 2-4.) Remove as much RAM as necessary. The "chisel" blade of the X-acto knife may be used if necessary. Upon completion, the substrate surface should be clean and rough and free of all residue. DO NOT SAND THE SUBSTRATE SURFACE SMOOTH.

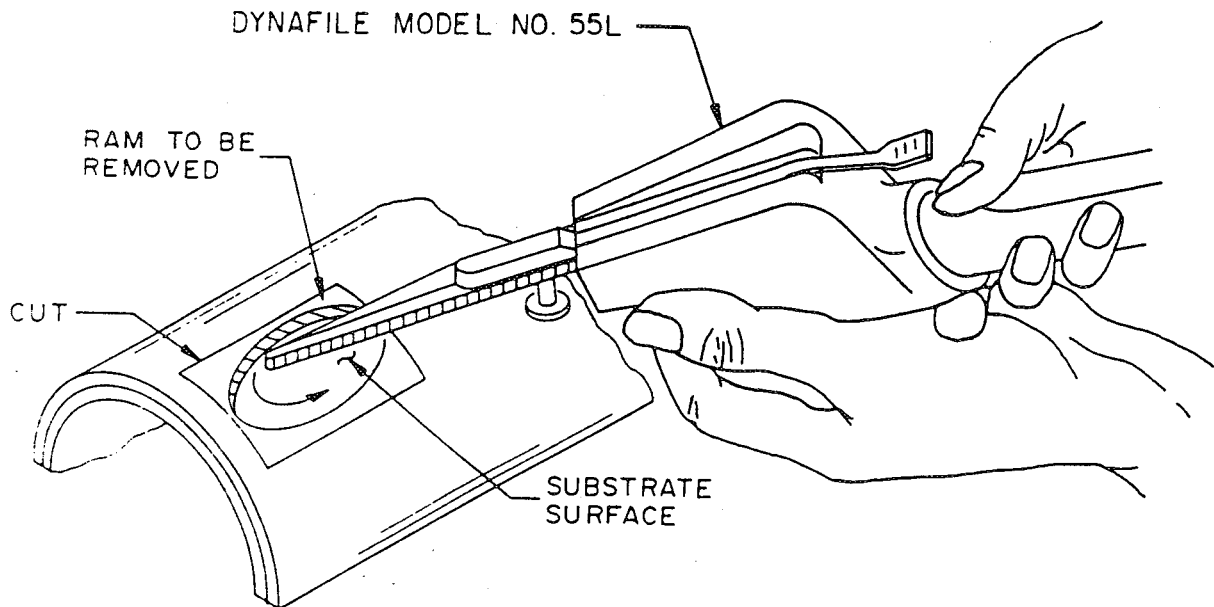


Figure 2-4. Use of Dynafile for RAM Removal.

(2) Prepare replacement of RAM.

- (a) Place the CIIIIa, CIIIIb, or CIIIIc as applicable on a clean, flat suitable working surface. Cut the RAM, utilizing the template previously used, with X-acto knife lubricated with isopropyl alcohol. See Figure 2-5(a).

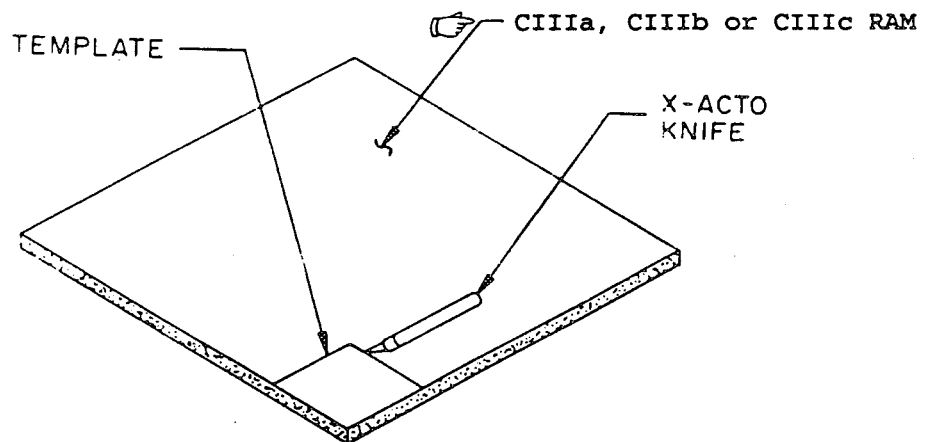


Figure 2-5(a). Cutting of Replacement RAM.

- (b) If RAM is being cut to replace a delaminated edge, use a machinists scale to determine appropriate size and shape. See Figure 2-3.
- (c) Lightly sand the surface of the "thin layer" of applicable RAM with a 60 gr sanding disc until the glossy surface has been evenly removed.

NOTE

Only a minimum amount of material should be removed in this operation.

WARNING

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (d) Wash the sanded surface of the RAM with isopropyl alcohol until no residue can be seen on the kimwipe. The substrate surface shall also be washed and wiped clean.
 - (e) Dry the washed surfaces at room temperature. In the event of contamination after washing, repeat the wash and dry procedure.
- (3) Installation.
- (a) Coat the prepared area of the substrate with accelerator #5 using a 1" brush. Ensure all bubbles are removed. Allow to dry at room temperature a minimum of 3 minutes.
 - (b) Coat the sanded side of the RAM (thin side) with Chemlok 7701 using a 1" brush. Ensure all bubbles are removed. Allow to dry at room temperature a minimum of 20 minutes.
 - (c) Mix the selected adhesive IAW manufacturer's instructions. A complete even coat of adhesive with a thickness of no less than 0.003 or no more than 0.006 inch is the goal of this application. See Figure 2-6.

NOTE

The text in this procedure refers to Versilok; however, Scotch-Weld can be used in place of Versilok. If Scotch-Weld is used, allow for a longer cure time.

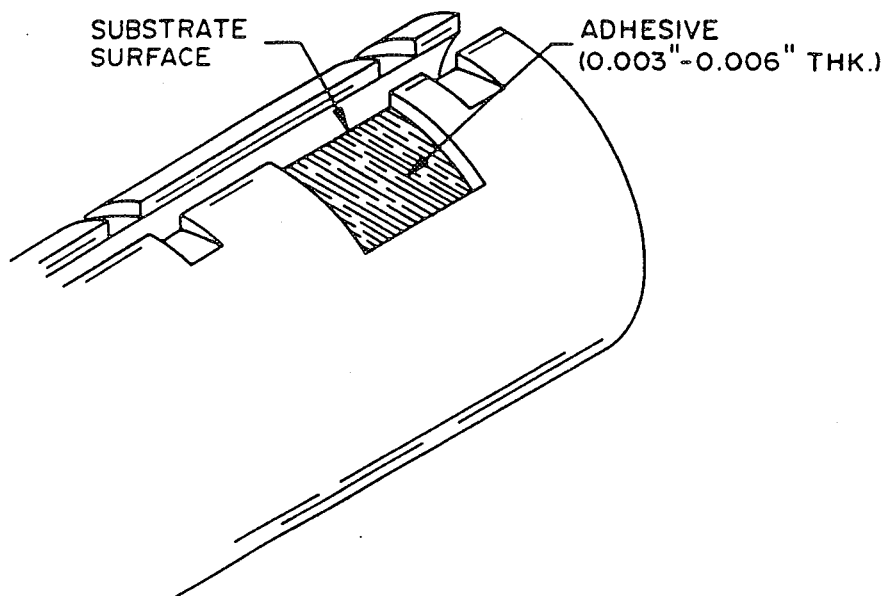


Figure 2-6. Adhesive Application.

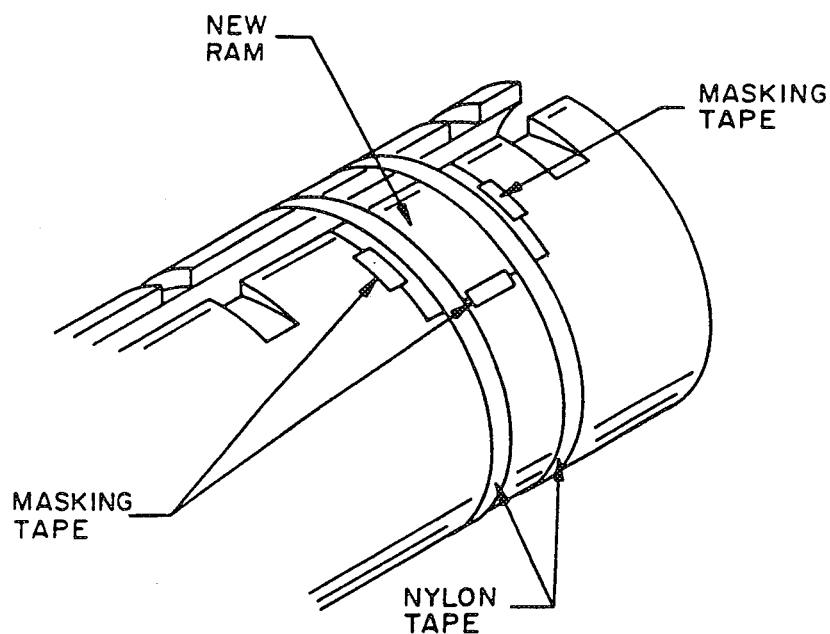


Figure 2-7. Use of Tape in Repair of RAM.

- (c) Using masking tape, position the replacement RAM and then wrap tightly with nylon tape in as many places as needed. (See Figure 2-7.) If Versilok was used, remove the masking tape and wait a minimum of 15 minutes before removing the nylon tape. If Scotch-Weld was used, allow to cure before removing tape. Remove carefully and wipe off residue.
- (d) If there are any voids in the seam joints, proceed as follows: Mix an appropriate amount of Versilok 506 with accelerator #5 IAW manufacturer's instructions to fill a 50 cc syringe. After removing the nylon tape, fill seams evenly with adhesive using the loaded syringe. (If Scotch-Weld (2216) is used, mix IAW manufacturer's instructions.) See Figure 2-8.
- (e) Wipe excess adhesive from seams and allow 15 minutes to dry. Lightly sand the repaired area until it is smooth. Use appropriate grit sanding disc.
- (f) Touch up the gray/black paint:
 1. Lightly sand the repaired area.
 2. Wash with alcohol - air dry.
 3. Paint the repaired RCU in accordance with Para. 2-1f.
 4. Notification of repair in accordance with para. 2-1g.

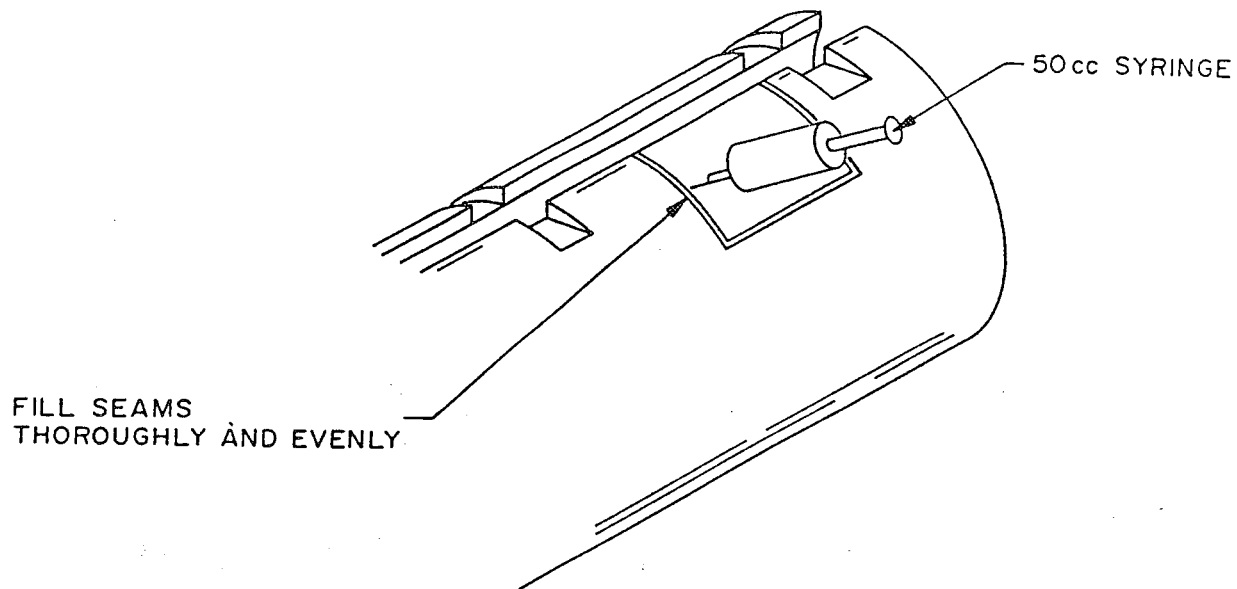


Figure 2-8. Filling Seams.

d. Edge Sealing (Laminating).

NOTE

This operation must be performed inside. The following instructions are to be followed when repair to a RCU involves an exposed edge or when a delaminated edge repair has been accomplished.

WARNING

If METHYLE ETHYLE KETONE is used as the SOLVENT in Para. 2-1d.(5), the SAFETY PRECAUTIONS specified in Para. 1-6a., 6b., and 6c. must be followed. Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (1) Spread out a proper size sheet of #112 glass cloth neatly on a clean, smooth, waxed surface.
- (2) Cut the glass cloth (Cut with the weave. Do not cut across the weave.) to a size appropriate to the area to be laminated (i.e., 1/2" wide strip x required length for edge, 3 pieces required).
- (3) Thoroughly saturate the pre-cut glass cloth with accelerator #5 and air-dry at room temperature.
- (4) Coat the edge to be laminated with accelerator #5 and air-dry at room temperature.

NOTE

Versilok 551 should be used if at all possible, as it does not require thinning and, therefore, eliminates the need for air-drying. If Versilok 551 is not available, utilize Versilok 506. Versilok 506 resin can be thinned to a laminating consistency with either methylene chloride or methyle ethyle ketone. This dilution is not to exceed 10% solvent by volume. After thinning, add accelerator in the ratio of 18:1 by weight.

- (5) Brush a thin coat of resin Versilok 551 or 506 as mixed on the edge of the RAM component to be laminated.
- (6) Affix the saturated glass cloth to the edge of the component. See Figure 2-9.

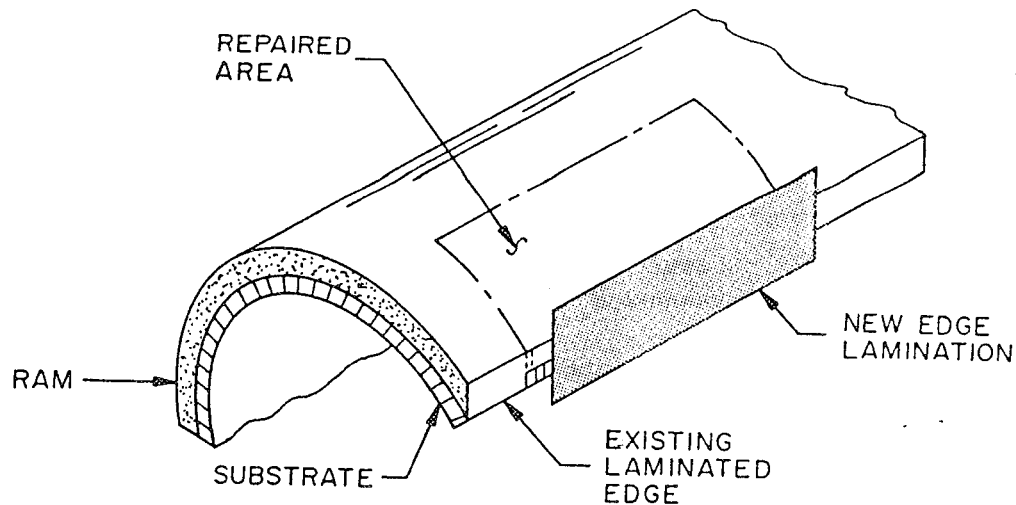


Figure 2-9. Lamination of Repaired Edge.

- (7) Smooth out all voids and curves with putty knife and applicator brush.
- (8) Repeat steps in Para. 2-1d.(5), (6), and (7) until a laminate of two layers has been built up.
- (9) Allow the resin to cure before handling the RAM component, not less than 10 minutes at 75°F for 551 and not less than 15 minutes at 75°F for 506.
- (10) Trim away excess laminate. Inspect for voids and resin poor areas. The properly laminated areas will appear amber in color. Voids (resin poor areas) will be noticeably white. See Figure 2-10.

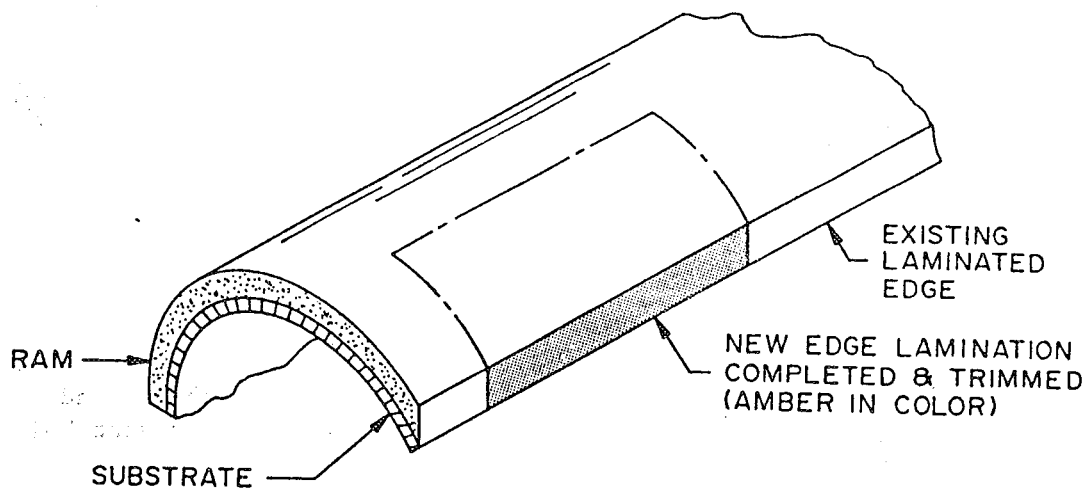


Figure 2-10. Edge Lamination Completed.

- (11) Lightly sand the laminated edges to remove all excess resin.

NOTE

Remove only the excess resin and not the glass cloth.

- (12) Wash the repaired area with isopropyl alcohol and air dry. Paint the repaired area in accordance with Para. 2-1f.

e. Bubble and Delamination of RAM from Substrate Repairs.

- (1) Inspect the bubbles to verify that they are within the size limits of Para. 2-1a.(1) (page 2-1).
- (2) Using the needle of a 50 cc syringe, puncture the uppermost part of the bubble to make a vent hole. See Figure 2-11 (page 2-10).
- (3) Mix an appropriate amount of Versilok 506 thinned to 10% with accelerator #5 to fill a 50 cc syringe. See NOTE on page 2-8 for thinning instructions.

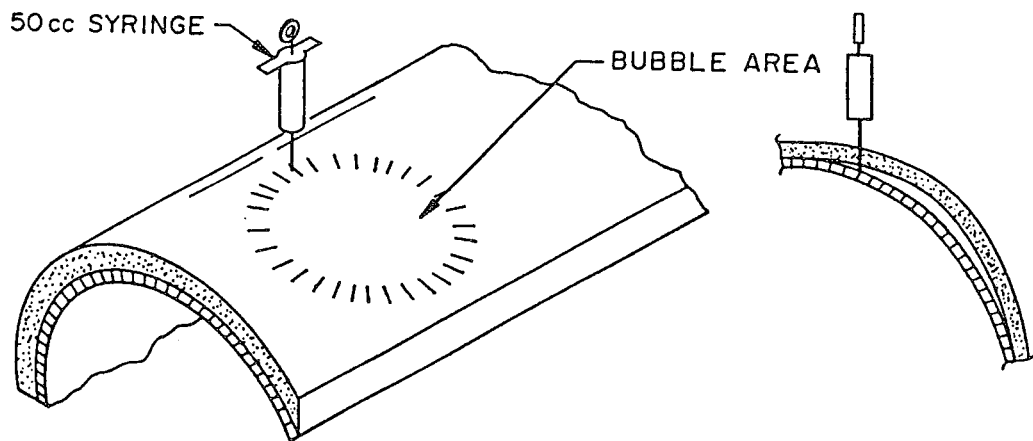


Figure 2-11. Providing Vent Hole.

- (4) Insert the loaded syringe into the lower part of the bubble, and inject the Versilok mixture until it appears at the upper vent hole. See Figure 2-12.

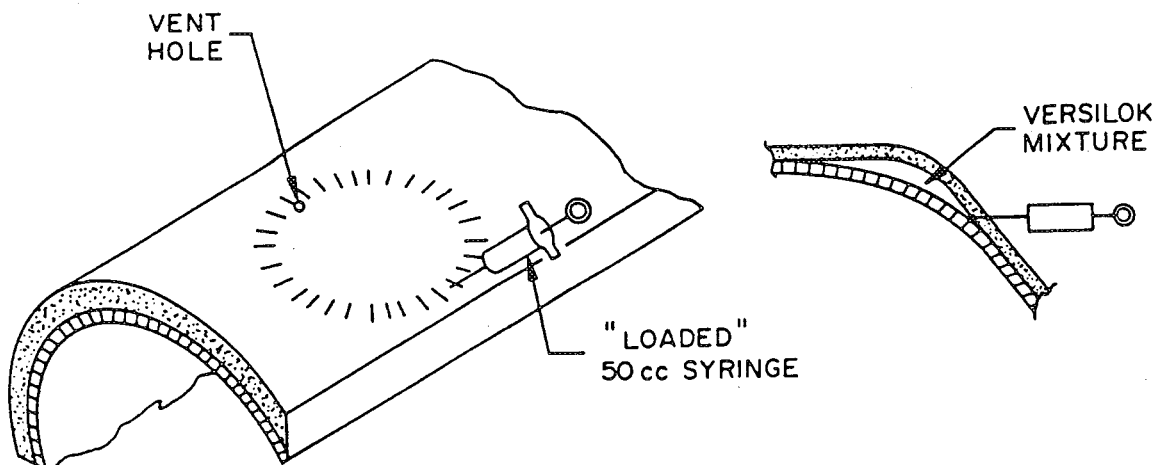


Figure 2-12. Adhesive Injection.

- (5) Mix an appropriate amount of full strength Versilok 506 with accelerator #5 IAW manufacturer's instructions. Load the mixture into the syringe and again inject it into the lower puncture hole until the thinned Versilok mixture has been replaced by the full strength mixture. See Figure 2-12.
- (6) Wrap the treated bubble tightly with nylon tape to restore the correct contour. Wait a minimum of 30 minutes before removing tape. Remove tape with care and wipe off all residue.
- (7) If there is any paint pulled away from RAM during tape removal, repaint as required.

f. Painting.

- (1) For priming metal substrate surfaces use Chemglaze 9924.
- (2) For priming RAM surfaces use Chemlok 7701.
- (3) For finishing substrate and RAM surfaces use A-471 Chemglaze II (gray), A-382 Chemglaze II (black), and A-170 Flattening Agent.

WARNING

SAFETY PRECAUTIONS as specified in Paras. 1-6a., 1-6b., and 1-6c. must be adhered to. Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCE.

- (4) Wash the sandblasted (sanded) metal substrate surfaces with isopropyl alcohol. Mask off component/unit identification areas.

- (5) Lightly sand with a 60 gr sandpaper disc or paper as appropriate until the surface gloss is evenly removed. Wash with isopropyl alcohol until all loose residue has been removed.

NOTE

Use clean gloves to handle kit components during and after the alcohol wash and until after the final coat of paint has been applied and has cured.

- (6) Mix Chemglaze 9924 in a ratio of 1.0 to 1.0 by volume, part A to part B. (Mix only enough for 8 hours use.) Mix well and allow to stand for 15 minutes.

NOTE

All paint materials that require mixing are to be stirred with a metal stirring tool. This tool shall be mounted in a drill motor and shall be utilized for mixing paint and for stirring while paint is being applied.

- (7) Apply base coats of Chemglaze A-471, in case of periscope covers, or A-382. All others can be applied as they are. No additional material is required.
- (8) Mix top coats of Chemglaze A-471 and/or A-382 by the addition of A-170 Flattening Agent at a ratio of 1:1.
- (9) Prime the repaired RAM surfaces and edges with Chemlok 7701 primer and paint with Chemglaze A-471 or A-382 as appropriate with brush or spray. If applied with a brush, apply two coats. If applied with a spray gun, apply three coats. The top coat should be mixed in accordance with Para. 2-1f.(8) and applied within 1 hour after the second coat is applied. See the Psychrometric chart, Figure 2-13, page 2-13 for optimum curing conditions.
- (10) Camouflage RCU components.
 - (a) Spray the component lightly with A-382/A-170 black within 1 hour after the base coat(s) has been applied in accordance with Para. 2-1f.(9). The light mist of black should be sprayed over the black to produce a surface that appears to be gray with tiny black dots all over.
 - (b) Spray the component to produce camouflage spots using A-382/A-170 black. The largest camouflage spots should be approximately $\frac{3}{4}$ of the height of the component times $\frac{1}{2}$ the diameter of the component, and irregular in shape, solid in the core, and fogged towards the edges.

- (c) Ensure the camouflage spots are complete on each kit component and do not lap over the edge of the component. Such overlap will produce an unacceptable break in the fogged edge of the black spot pattern. See Reference (o) for proper application.

g. Notification of Repair.

- (1) Use attached form RADAR CAMOUFLAGE UNIT REPAIR NOTICE to notify NAVSSES after the completion of all repairs. The form RADAR CAMOUFLAGE UNIT REPAIR NOTICE may be duplicated locally as required. Refer to Appendix B.

*Rapid skinning occurs in this area due to increased solvent evaporation. Rapid surface cure causes bubble entrapment. Use a slower solvent to keep the surface open such as Chemglaze Thinner 9956.

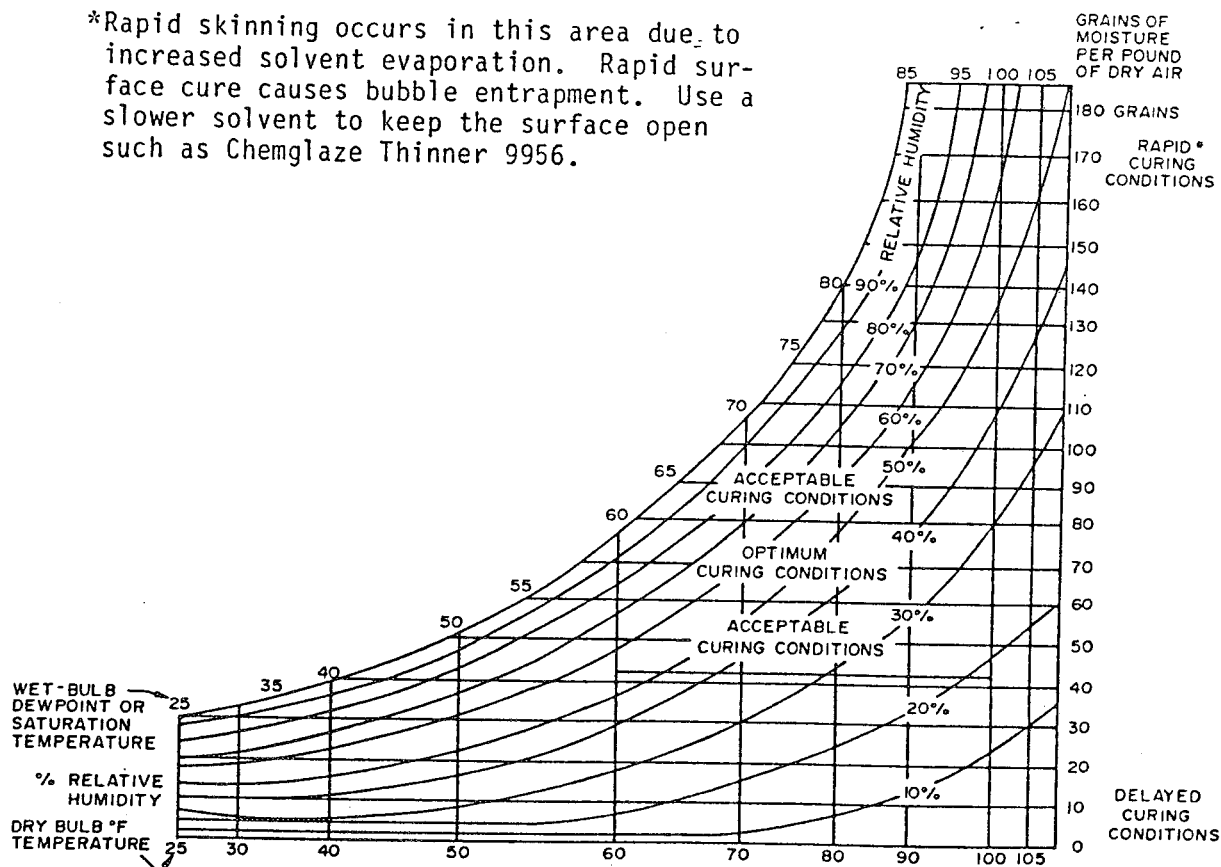


Figure 2-13. Psychrometric Chart.

NOTE

Curing Conditions

The Chemglaze polyurethane coatings cure or polymerize to high molecular weight by reacting with the moisture in the air. The by-product of this reaction is carbon dioxide (CO₂), a gas. This reaction begins even before the solvent is completely evaporated.

Under optimum conditions (i.e., 77°F (25°C) and 50 per cent relative humidity), there are 70 grains of water present in the air to effect the cure. There are times when there are not enough grains of moisture to cure a moisture-curing polyurethane. Any climate conditions which do not allow a minimum of 42 grains of moisture in the air will produce a poorly cured film with poor properties. A simplified psychrometric chart is provided (see Figure 2-13) to demonstrate how the grains of moisture can be determined when the percentage of relative humidity and the dry bulb temperature are known. More detailed psychrometric information may be found in various engineering handbooks.

Forty-two or less grains of moisture and the associated low temperature will slow the cure of the coatings. Usually six or seven days are required to develop the ultimate properties of the polyurethanes under optimum conditions.

- (2) Whenever hazardous material is utilized, use form OSHA-174, annotated as appropriate. Mail the completed original form and 1 copy to:

U.S. Department of Labor (OSHA)
200 Constitution Avenue N.W.
Washington, D.C. 20210

h. AN/BRD-7 Inspection Criteria/Repair Guidance.

- (1) Any kit with rust colored streaks exceeding 10% of the surface area on the kit is to be returned to the appropriate depot level facility. NAVSSES is currently the depot repair facility for all BRD-7 RAM kits. A west coast depot repair facility for RAM kits is currently being investigated. Rust color streaking on the kit shows a breakdown in the RAM due to corrosion, which is unsatisfactory.
- (2) Any evidence of kit bulges or delamination requires the RAM kit to be returned to the depot repair facility. Bulges are an indication of water penetration and entrapment beneath the RAM. Additionally edge delamination is an indication that water has penetrated the RAM. RAM that separates from the BRD-7 at the edges, are to be repaired by the IMA (by rebonding the RAM to the antenna), if less than one-quarter inch of RAM is separated. The RAM area that is being rebonded must be washed with isopropyl alcohol to eliminate residue. Rebonding is to be accomplished in accordance with paragraph 2-1-c. Using kits with either bulges or delaminated RAM affects performance and if left unrepaired, will lead toward failure of the entire RAM kit.
- (3) The IMA can repair any and all surface cracks in the RAM kit provided the depth of the cracks is less than the thickness of the RAM, (MX-9991 .250 inches, MX-9992 .125 inches) and there is no evidence of

bulging locally surrounding the crack. The cracks are to be filled with Versilok 506 resin mixed with accelerator #5. If the crack penetrates through the RAM and into the circuit analog, the RAM kit is to be returned to NAVSSES for disposition. Cracks deep enough to penetrate the circuit analog material provide an opening for water penetration, leading to extreme delamination.

- (4) The IMA can repaint any cracked or peeling RAM kit surface areas. The area of repair is to be prepared by sanding any remaining paint with 120 grit sandpaper. The surface is to be cleaned using isopropyl alcohol before repainting. The proper paint for BRD-7 RAM kits is Chemoplaze II A-382 (Black). For further painting instructions, paragraph 2-1.f is to be followed.
- (5) Repairs to all non-kit areas such as the BRD-7 closure cap are to be completed in accordance with details provided in Section III.

i. Disposal.

- (1) Scrap RAM should be disposed of by heating the RAM until the layers can be separated. Separate the layers and cut the RAM sections into small strips (less than 1/4" wide). Dispose of each layer separately.

SECTION III - APPLICATION OF RAM TO CLOSURE CAPS

- 3-1 PROCEDURES: Section III describes in a step-by-step method the procedure for application of Radar Absorption Material (RAM) to closure caps for the following systems:

AN/BLA-4
 AN/BRD-7
 AS-1653/WLR or AS-3327/BLR
 Designated Applications

- a. Manpower Requirement. Estimated manpower requirements include:
 - (1) Installation of either CIIa or CIIb will require 6 man-days per each closure cap - two men working 3 days.
- b. Services Required. Services required to support the installation of RAM on closure caps are as follows:
 - (1) Rigging - including crane services as necessary
 - (2) Mast Operation - Ship's personnel as applicable
 - (3) Staging - as necessary
- c. Clearance and Preparation of the Closure Cap.
 - (1) Accomplishment of SHIPALTS 2134 and 2307 are required to provide the necessary clearance for the application of RAM to AN/BRD-7 antenna and closure cap. These SHIPALTS shall be accomplished before starting this procedure. For a typical AN/BRD-7 closure cap RAM application, see Figure 3-1. For 688 class, see Reference (1).
 - (a) After removal, the AN/BRD-7, AN/BLA-4, AS-1653/WLR and/or AS-3327/BLR closure caps will require "feathering" of the fiberglass outer edge. See Figure 3-2 (page 3-3). The above mentioned closure caps will also require RAM application to the closure cap vertical support AN/BRD-7 and/or AN/BLA-4 and to the closure springs of AS-1653/WLR and/or AS-3327/BLR. See Figure 3-3.
 - (b) Any non-metal surface to which RAM is to be applied will require application of screen prior to application of the RAM. Metal surfaces do not require screen.

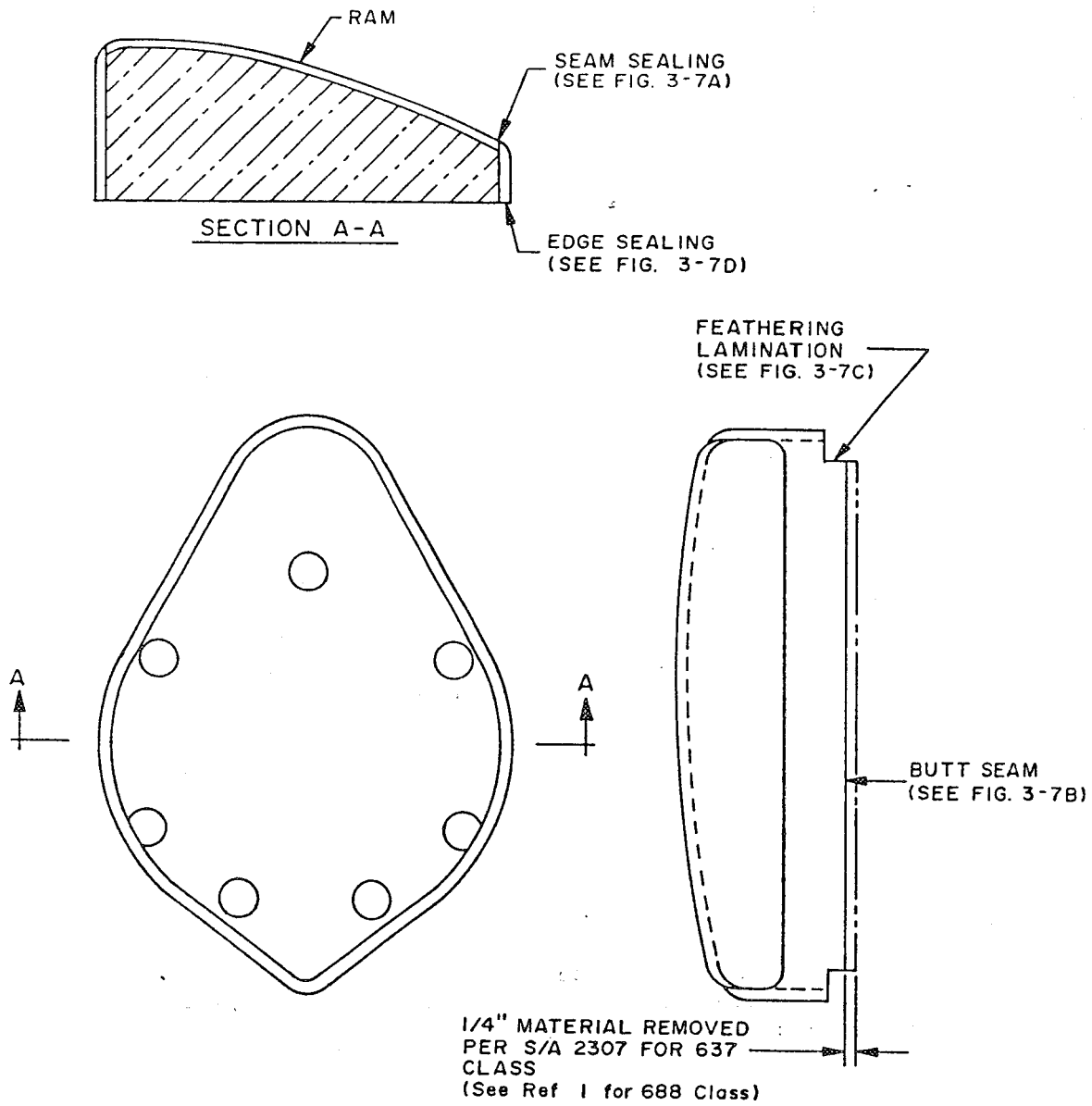
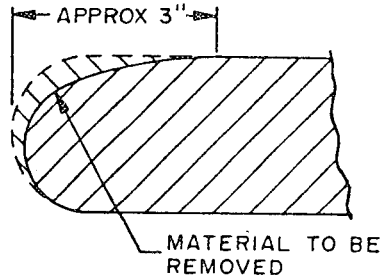
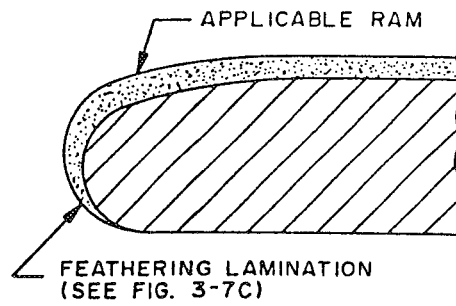


Figure 3-1. AN/BRD-7 Closure Cap Machining and RAM Application.



DETAIL A
(FEATHERING OF CLOSURE CAP EDGE)



DETAIL B
(RAM APPLICATION)

Figure 3-2. Typical Closure Cap Machining and RAM Application.

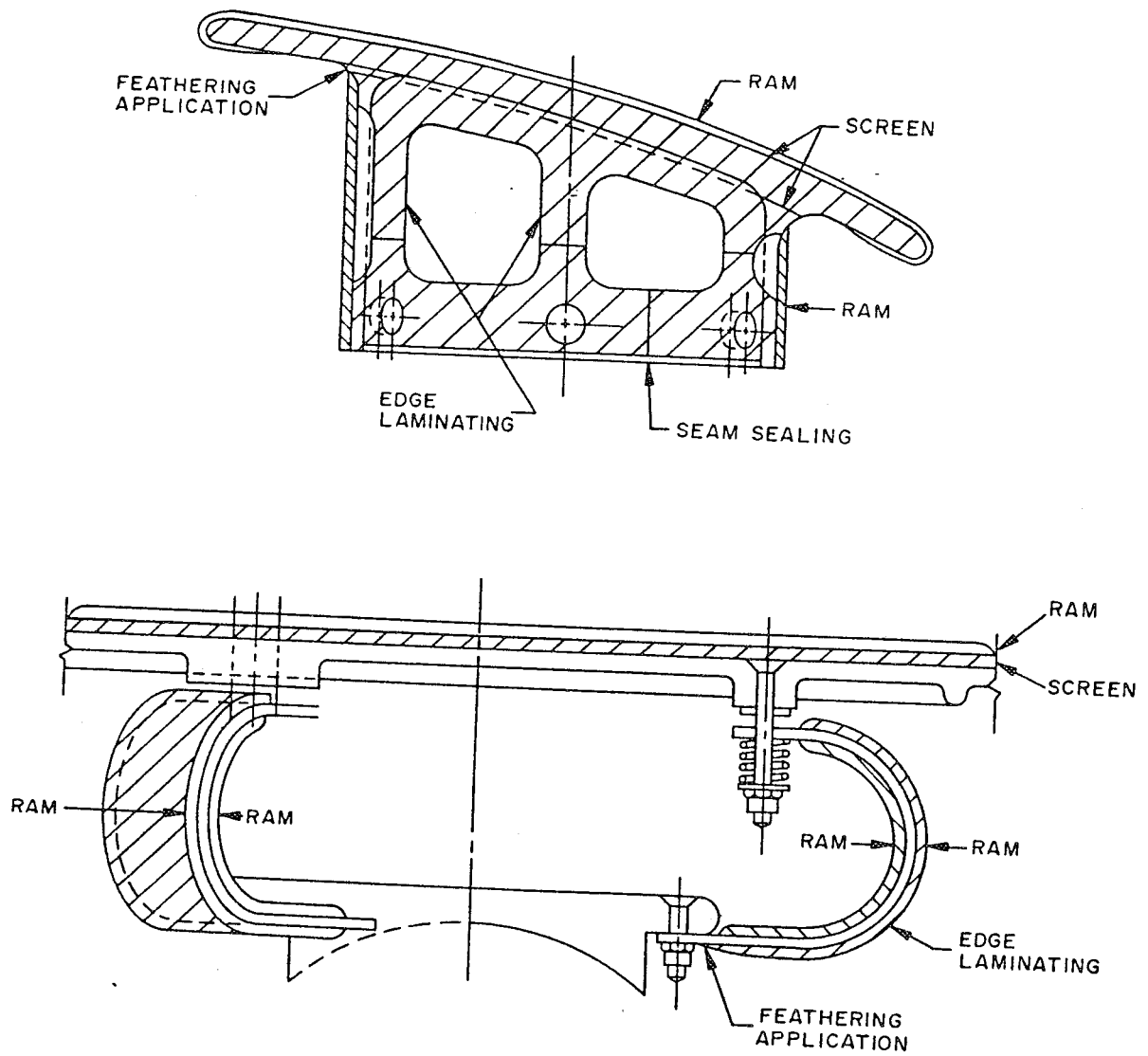


Figure 3-3. "Non-Kit Area" RAM Application.

Remove by sanding any remaining paint on any surface to which RAM is to be applied. Metal surfaces should not be sanded smooth.

NOTE

Outside installation of RAM requiring adhesive should not be attempted under the following conditions:

- o While it is raining.
- o Early in the morning or late in the evening when dew can condense on the structure.
- o When the ambient temperature is below 60°F.

d. Safety Precautions.

- (1) Refer to Para. 1-6.

e. Cutting and Fitting the Screen for a Typical Bonding Application.

- (1) Template each section of the closure cap or miscellaneous areas to be covered. See Figure 3-4.

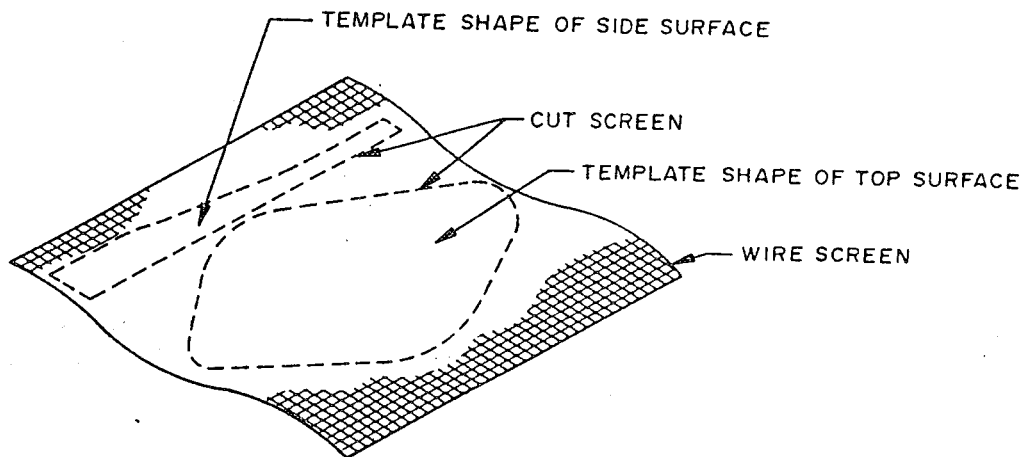


Figure 3-4. Cutting of Screen

- (2) Cut the screen to the shape of the template(s).
- (3) Affix the screen(s) to each non-metallic section of the closure cap, fitting as tightly as possible to achieve maximum contact between the screen and closure cap surface area.
- (4) Mark and make cutouts required for bolt holes as applicable.

- (5) Lightly sand both sides of all pre-cut screen(s) with 60 gr sandpaper.

WARNING

Work areas must be ADEQUATELY VENTILATED and
FREE of SPARK PRODUCING SOURCES.

- (6) Wash both sides of all pre-cut screen(s) using kimwipes and isopropyl alcohol until no residue can be seen on kimwipe. Allow screen(s) to air-dry. In the event the screen(s) become contaminated after washing, repeat the washing and drying procedure.
- (7) Wash the closure cap surfaces using kimwipes and isopropyl alcohol until no residue can be seen on kimwipe. Allow closure cap surfaces to air dry. In the event the closure cap surfaces become contaminated after washing, repeat this procedure.

NOTE

A situation may exist where additional pieces (for vertical support and/or closure springs) of the screen must be bonded to the closure cap. Use discretion when applying adhesive for the screen application. Coat only the area for which an individual piece of screen is to be applied.

- (8) Using a brush, coat the previously washed screen and closure cap surfaces with accelerator #5.

NOTE

Scotch-Weld is recommended for use in this section of the procedure. Do not coat screen or closure cap with accelerator #5 when using Scotch-Weld.

- (9) Using a brush, coat the previously washed surface of the closure cap with a mixture of adhesive. Apply the resin mixture, as evenly as possible, to a thickness of 0.003 to 0.006 inch. Retain a small portion for test to be certain of proper cure.
- (10) Place the screen on the closure cap, aligning the holes and edges. Press all areas firmly with putty knife forcing the adhesive to bleed through all holes in screen. Use brush to spread the adhesive into a smooth even bond. See Figure 3-5.

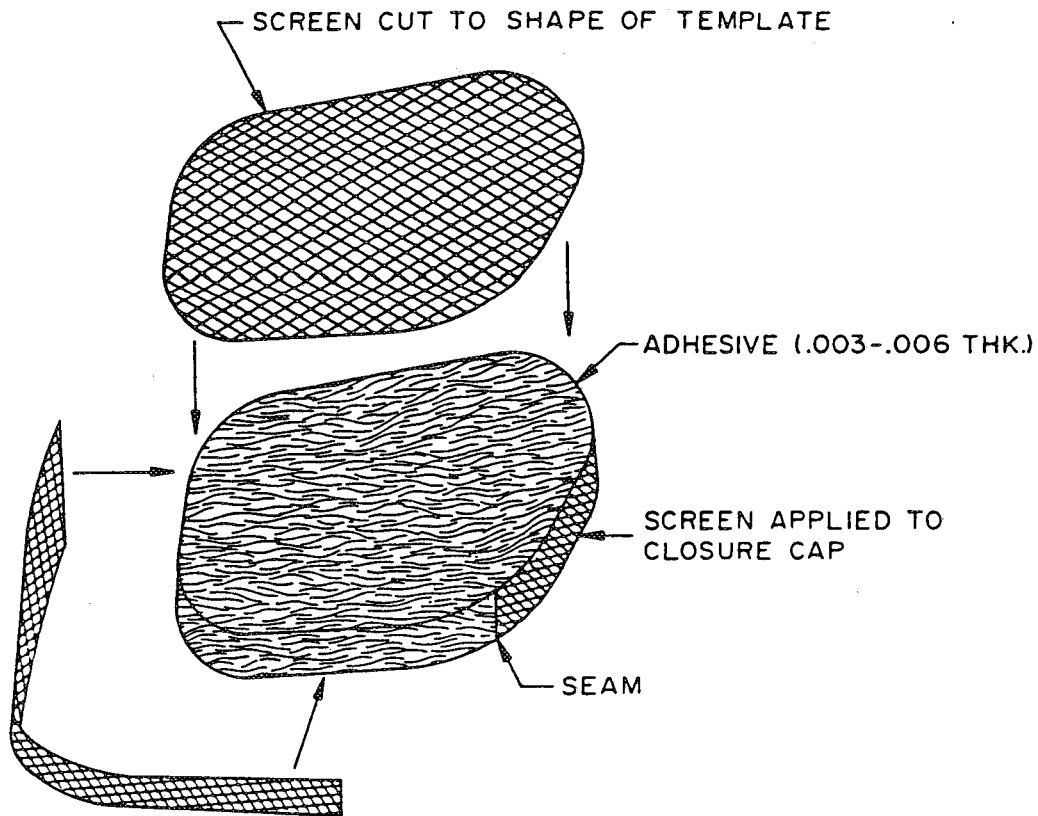


Figure 3-5. Applying Screen to Closure Cap.

- (11) Apply pressure to screen(s) using one of the following listed (a), (b), or (c) procedures as appropriate, to ensure screen(s) conform to the faired shape of the closure cap.
- (a) Place closure cap in vacuum bag (fabricated by plastics shop). Insert vacuum pump hose attachment into one corner of vacuum bag. Seal open edges of bag using sealing compound. Seal hose attachment into corner of bag using nylon tape. Turn on vacuum pump, pull vacuum on bag to maintain the screen(s) in proper position until the adhesive is cured.
 - (b) Cut 2 sheets of polyethylene film to appropriate size to cover closure cap. Place one sheet of plastic on smooth flat surface near vacuum pump. Place closure cap on plastic sheet. Lay a 1/2-inch bead of sealing compound around all four edges of the plastic sheet. Cover closure cap with second plastic sheet. Insert vacuum pump hose attachment into one corner. Press edges of plastic sheets together forming a seal with sealing compound. Seal hose attachment in corner using nylon tape as applicable. Turn on vacuum pump, pull vacuum on bag to maintain the screen(s) in proper position until the adhesive is cured.

- (c) Cover the closure cap with a sheet of plastic. Place shot bag(s) as required to retain the screen(s) in proper position until the adhesive is cured.

NOTE

Ensure adhesive is cured before proceeding.
Approximate curing times for Scotch-Weld:

Temperature	Time
40°F	7 days
60°F	16 hours
72°F	10 hours
100°F	5 hours
150°F	2 hours

- (12) When the screen has been bonded into place, see curing times; remove the vacuum bag or shot bags and plastic cover as applicable. Inspect the surfaces. Ensure screen is bonded to closure cap and no voids (absence of adhesive) exist. Ensure all areas requiring screening are covered.
- (13) Using sandpaper, sand away adhesive evenly and smoothly until the outer surface of screen is exposed and brightened. Ensure there are no high spots or depressions and that surface is flat and smooth as possible.
- (14) After sanding, wash the entire screened surface using isopropyl alcohol and kimwipes until no residue can be detected on kimwipe.
- (15) Allow the washed surfaces to air dry. In the event of contamination after washing, repeat the procedure in Para. 3-1e.(14).
- f. Preparation of and Bonding of the RAM.

- (1) Place template(s) on RAM. To avoid waste of RAM due to odd sizes and shapes of closure cap template(s), place template(s) as near edge of RAM as possible (see Figure 3-6(a)). In cases where one piece of RAM will not cover the entire closure, overlap the pieces of RAM as shown in Figure 3-6(b), so as to result in a single seam down the centerline of the closure cap.

CAUTION

Avoid seams and/or joints on the forward
(leading) edge of the closure cap.

- (2) Cut the RAM slightly larger (1/8") than the template(s) using X-acto knife. See Figure 3-5(a).
- (3) Fit the RAM piece(s) to the closure cap before applying the adhesive to verify that all bolt holes, if applicable, are properly positioned.

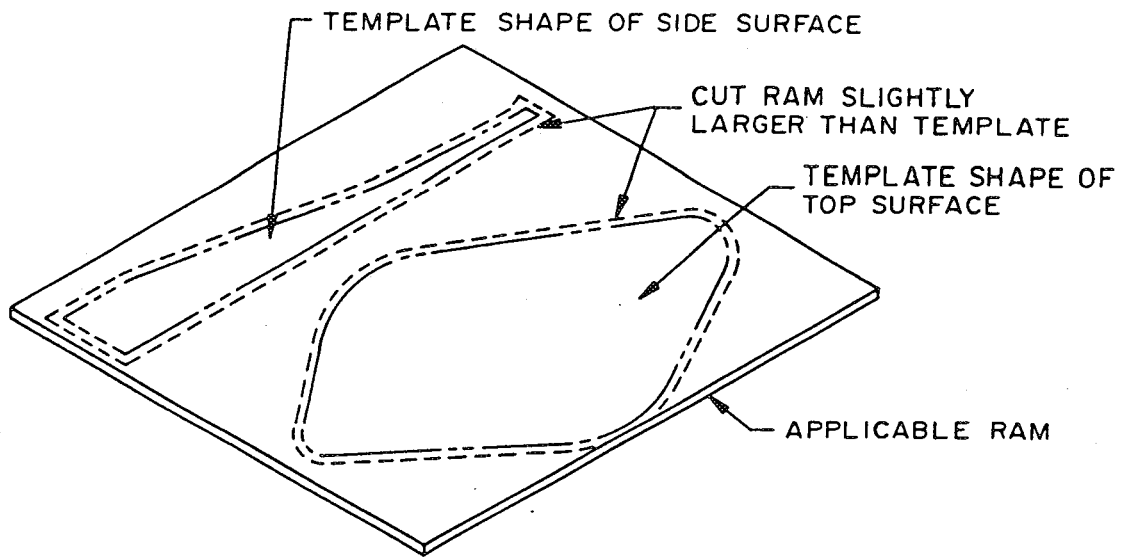


Figure 3-6(a). Cutting of RAM

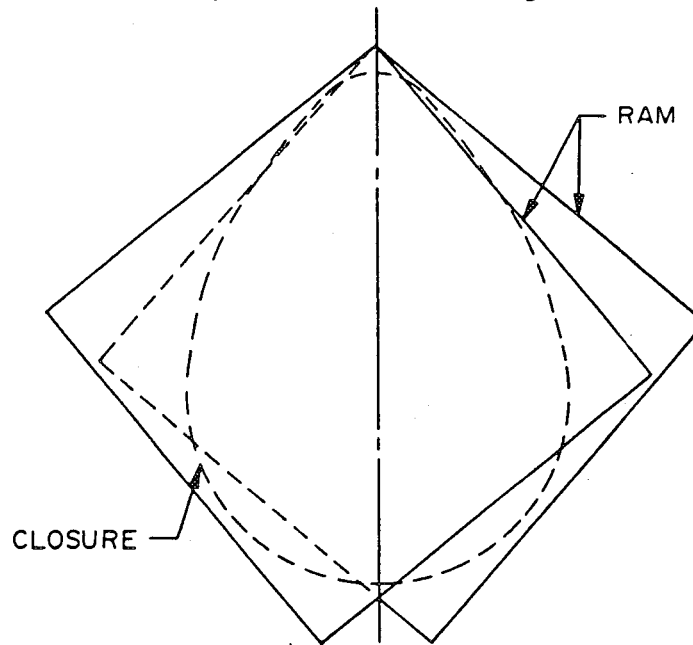


Figure 3-6(b). Cutting of RAM.

- (4) Repeat procedure in Para 3-1c.(14) if screened closure cap has become contaminated.
- (5) Lightly sand the surface of the "thin layer" of applicable RAM with 60 gr sandpaper or sanding disc until the glossy surface has been evenly removed.

CAUTION

Only a minimum amount of material should be removed during this operation.

WARNING

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (6) Wash the sanded surface using isopropyl alcohol and kimwipes until no residue can be seen on the kimwipe. Allow to air dry at room temperature. Place to one side and cover to prevent contamination until needed for installation.
- (7) Using a brush, coat the previously sanded surface of the applicable RAM with Chemlok 7701. Allow to dry 15 to 20 minutes (room temperature 75°F) or 3 to 5 minutes for temperatures at 120° to 150°F.
- (8) Using a brush, coat the previously washed surfaces of the screened area with Scotch-Weld. Apply the adhesive as evenly as possible to a thickness of 0.003 to 0.006 inch. Retain a small portion for test to ensure proper cure.
- (9) Using either of the procedures in Paras. 3-le.(11)(a), (b), or (c), bond the RAM to the closure cap (substituting RAM in lieu of screen). Additional trimming and fitting of RAM may be required to obtain proper fitting seams and/or edges. Let the assembly cure before proceeding to seal the seams and edge laminations.

g. Seam Filling.

NOTE

Versilok is described; however, Scotch-Weld can be used.

- (1) Seam filling will be used to ensure proper edge bonding of adjacent pieces of RAM and to provide a smooth, faired external surface. See Figure 3-7 DETAIL A or B.
- (2) Mix Versilok 506 resin and accelerator #5 IAW manufacturer's instructions and pour into the syringe provided. Inject the adhesive mixture into the seam(s) as required. It is important that the syringe tip be pressed as deeply as possible into the seam(s) for proper void filling. Smooth the surface of the filled seams with a tongue depressor or putty knife.
- (3) Wipe all excessive resin from the seam(s) and allow the resin to dry. Sand the seam area smooth with an appropriate grain sanding disc of paper.

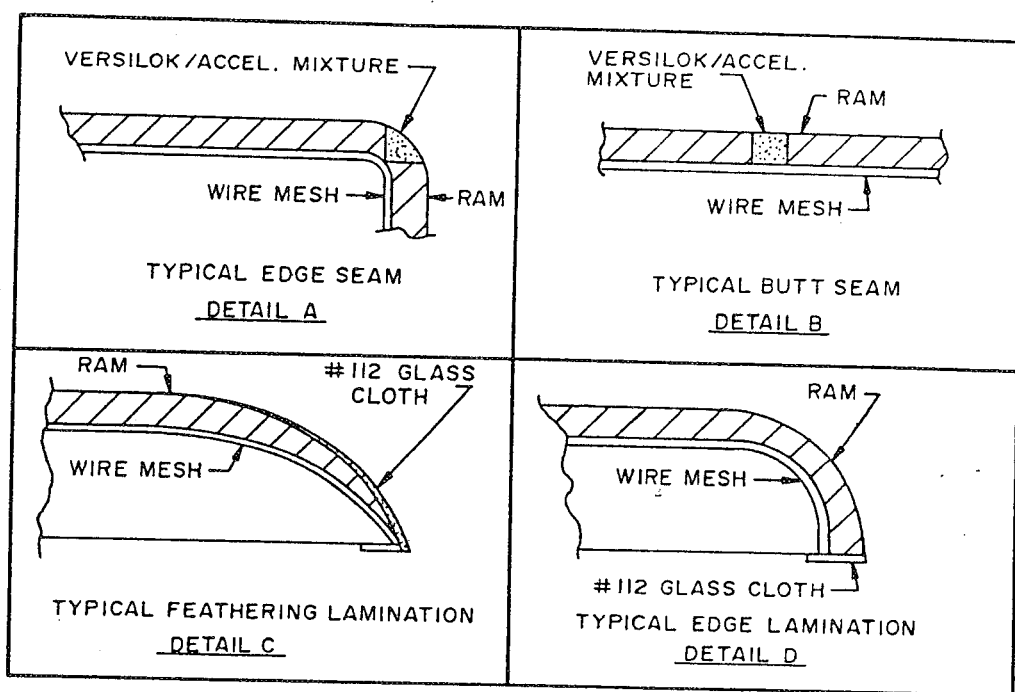


Figure 3-7. Typical Seam Filling and Edge Lamination.

WARNING

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (4) Wash the filled seam(s) using isopropyl alcohol and kimwipes until kimwipes are clean. Let dry for approximately 15 minutes.

h. Edge Seal (Laminating).

NOTE

Versilok is recommended; however, Scotch-Weld can be used.

- (1) All exposed edges of RAM must be sealed (laminated) including all bolt hole openings on top of the closure cap.

WARNING

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (2) Spread out the supplied sheet of #112 glass cloth neatly on a smooth surface.

- (3) Cut the glass cloth to a size equal to the area to be laminated (i.e., 1/2" wide strip x required length). Cut two pieces as a laminate. Three layers are required.
- (4) Thoroughly saturate the glass cloth with accelerator #5 and air dry at room temperature.
- (5) The edge to be laminated shall be coated with accelerator #5 and air-dried at room temperature.
- (6) Using Methylene Ethyle Ketone or Methylene Chloride thin the Versilok 506 resin to a laminating consistency. Do not exceed 10% solvent by volume. See NOTE proceeding Para. 2-1d.(5).
- (7) Brush a thin coat of the resin mixture, as mixed in Para. 3-1h.(6), on the edge to be laminated.
- (8) Apply the saturated glass cloth to the edges of the closure cap. Refer to Figure 2-9.
- (9) All voids and curves shall be worked out with putty knife and applicator brush.
- (10) Repeat procedures in Paras. 3-1h.(7), (8), and (9) until a laminate of two layers has been built up.
- (11) Allow the resin to cure a minimum of 30 minutes at 70°F before handling the RAM component.
- (12) Trim away the excess laminate. Inspect for voids and resin poor areas. The properly laminated areas will appear amber in color. Voids (resin poor areas) will be noticeably white.
- (13) Lightly sand the laminated edges to remove all excess resin. See Figure 3-7 DETAILS C and D.

NOTE

Remove only the excess resin and not the glass cloth.

WARNING

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (14) Wash all laminated edges using isopropyl alcohol and kimwipes. Allow to air dry.
- (15) Typical completed installations are shown in Figures 3-8, 3-9, and 3-10.

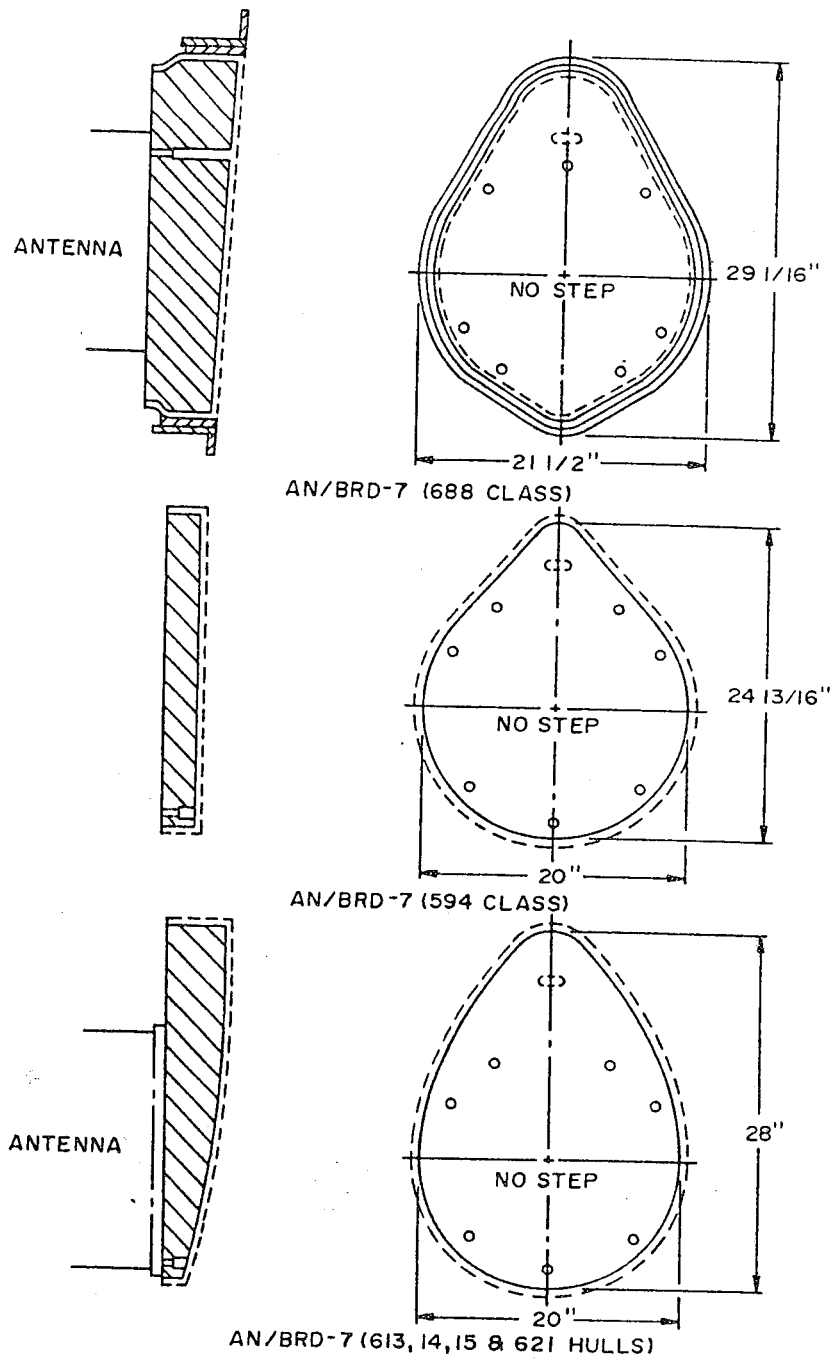


Figure 3-8. Typical Closure Cap RAM Application.

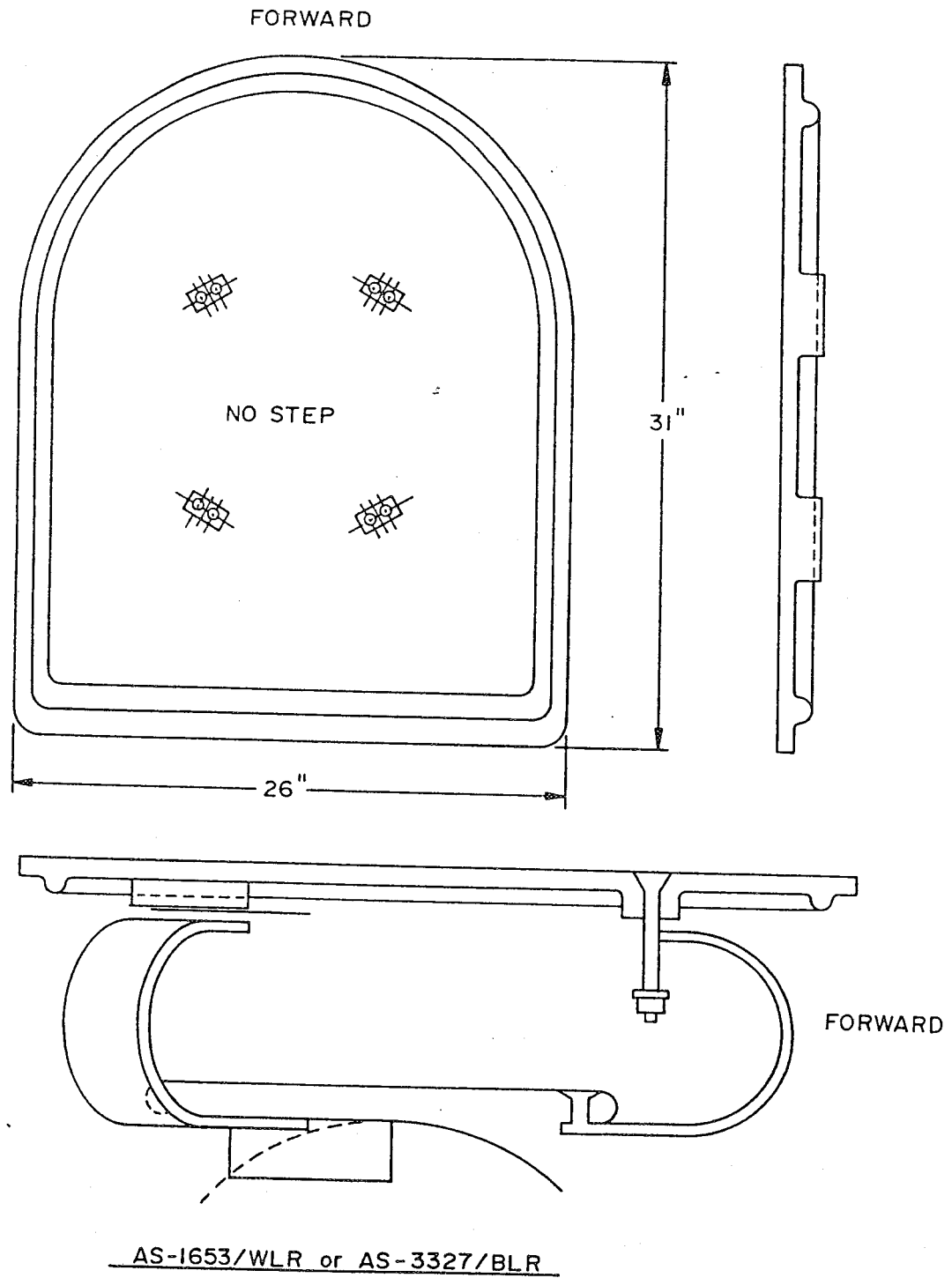


Figure 3-9. Typical Closure Cap RAM Application.

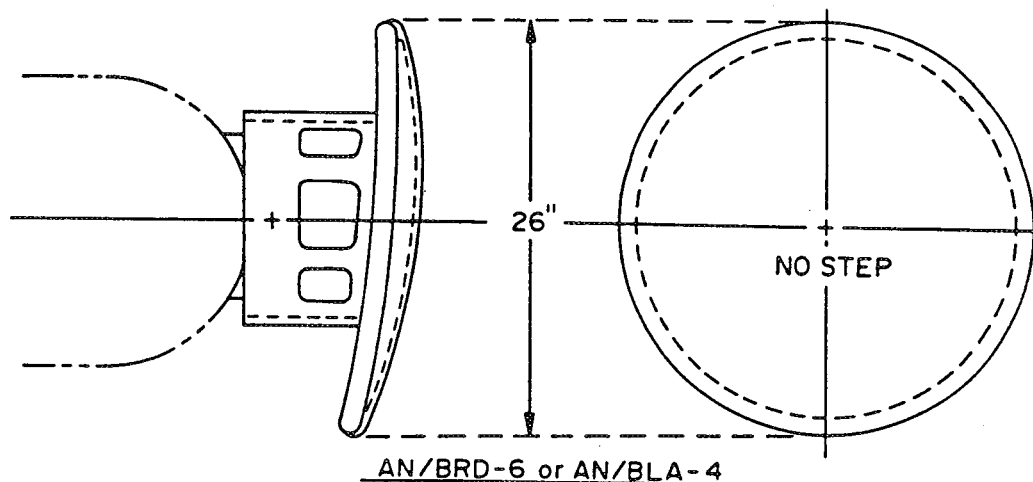


Figure 3-10. Typical Closure Cap RAM Application.

i. Bubble Repair.

- (1) Repair bubbles in accordance with the instructions contained in Para. 2-1e.(1) through 2-1e.(7).

j. Bonding RAM to Dark-Eyes (Pressure Vessels and Window Cover).

- (1) Inspect RAM for correct type (i.e., CIIIIa, CIIIIb, or CIIIIc).

CAUTION

Do not use any material that will scratch or damage the crystal.

- (2) Cover crystal antenna with kimwipes.
- (3) Inspect dark-eyes to ensure that area(s) to be covered is (are) correct.
- (4) Using sandpaper or discs, remove all abnormal protrusions, high spots, and slag.
- (5) Remove all dirt, paint, and other foreign matter using sandblasting technique if required. If sandblasting is utilized, ensure all areas that will be subjected to damage by sand are covered, especially the crystal.

WARNING

Work areas must be ADEQUATELY VENTILATED and FREE of SPARK PRODUCING SOURCES.

- (6) Clean area of dark-eyes to be covered using isopropyl alcohol and kimwipes; wash until kimwipes show no evidence of dirt or residue.

- (7) Inspect area(s) to be covered. Look for:
 - (a) Dirt
 - (b) Paint
 - (c) Slag
 - (d) Protrusion
- (8) If the inspection reveals that any of the conditions still exist, repeat procedures in Paras. 3-1j.(4) through 3-1j.(7) (d).
- (9) Lay-out appropriate RAM on the surface to be covered, shape, cut, and trim as required for complete coverage.
- (10) Clean area(s) to be covered using isopropyl alcohol and kimwipes.
- (11) Clean the side of RAM to be bonded to prepare dark-eye area(s). Wash RAM using isopropyl alcohol and kimwipes until no further evidence of dirt or residue shows on kimwipe. Allow to air dry.
- (12) When RAM surface has dried, apply Rubber Primer Chemlok 7701 to cleaned side of RAM. Apply IAW manufacturer's instructions. Allow to air dry.

WARNING

Work areas must be ADEQUATELY VENTILATED
and FREE of SPARK PRODUCING SOURCES.

- (13) When Chemlok 7701 has dried completely, apply a thin even coat of Conductive Cement, Ecco Bond Solder 57C to RAM surface IAW manufacturer's instructions. Allow to air dry.
- (14) When conductive cement is completely dry, measure surface resistivity of prepared surface. Using multimeter Simpson 260 (SCAT 4245) or equivalent, measure at 1-inch intervals vertically and horizontally over entire conductive cement coated surface of RAM. Resistance should be less than 1 ohm between measured points. If measurement exceeds 1 ohm, apply a second thin coat of conductive cement. Allow to completely dry and reconduct test.
- (15) When the prepared RAM has met the required test criteria (less than 1 ohm), select the proper adhesive (i.e., Scotch-Weld, Versilok 551 or 506) with appropriate accelerators(s) and repeat procedures in Paras. 2-1c(3) through 2-1e.(7) as applicable.

k. Painting.

- (1) Apply two coats of A-382 (black) mixed with A-170 (flattening agent) at a ratio of 1:1. Refer to Para. 2-1f.

CAUTION

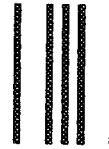
Do not use lead or a metallic base paint for lettering.

- (2) After the top coat is thoroughly dry; stencil, in red letters, the words NO STEP on the closure cap so as to be visible from all directions. Letters to be approximately 2" high. See Figures 3-8, 3-9, and 3-10 for suggested placement.

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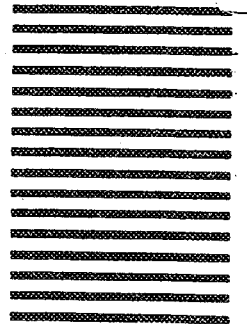
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